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Some Observations on and Experiences of the Use of the Stomach Tube.*

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This short paper is not intended as a treatise on the subject, but simply as a short history of some of my experiences with the use of the stomach tube, so that others may avoid the pitfalls into which I have fallen, and as a means of stimulating a discussion for exchange of views on the method.

Some seven or eight years ago, when I restarted in practice with my late father, a lot was written on the subject, chiefly by that able practitioner, Mr. Lang, of Brigg, and we decided to give a trial to the method, which promised a cure for all or most of the ailments from which domesticated animals suffer, and from the treatment of which most of us gain a precarious living. For this purpose we acquired the necessary instruments, *i.e.*, a pump and length of thick red tubing, as I believe is used in America, and a worn-out horse as the victim for our experiments.

As you are no doubt aware, there are two routes by which the tube can be passed, *viz.*, the oral and the nasal route, but we chose the latter for our trial, chiefly as it appealed to us as being simpler, while it was the system recommended by Lang. Our chief worry at that time was to know how we could tell if the tube had gone the right way down the gullet or into the trachea; and we practised for some time pushing it into the unfortunate horse's nostril and pulling it out, but we had not the least idea where the end of the tube might be, and we dared not for worlds have pumped anything in.

After that I wrote to Mr. Lang, and received a cordial invitation to spend a day or two with him and thrash out the difficulties. I immediately availed myself of this offer, and came back a budding expert.

I found Lang used a tube rather stiffer than the American one, as it was reinforced by canvas or some such material, and was also of much smaller diameter. This was obtained from Thornton and Co., of Princes Street, Edinburgh, and I begged a small sample from Lang as well as a sample of a tube of smaller bore, useful for ponies and cattle, and was soon in possession of a length or two of each tubing. Also, Lang soon disposed of my great trouble at the beginning, *i.e.*, to know where the tube had gone, as he pointed out to me that if it were in the gullet, it could be seen from the outside and its passage noted down the jugular furrow.

I will now endeavour to give you my procedure in using the tube.

The tube used is about 14 feet or 14 feet 5 inches long, with a diameter of five-eighths of an inch, and a bore of about half an inch. This will suffice for the majority of horses, but for ponies and cattle I generally prefer a smaller tube of three-eighths of an inch in diameter, and about a quarter of an inch bore. A black mark in ink is drawn round the tube about 14 inches from the end, which is supposed to show the distance to the throat, and another similar mark at about 65 inches is supposed to mark the average distance to the stomach.

In the horse I prefer to use the left nostril, and for this purpose have the horse held by a halter on the off side. A twitch is seldom required, as most horses submit quietly once the tube has entered for a few inches into the nostril. The operator stands in the same direction as the horse, and lifts the flap of the nostril with the thumb and index finger of the right hand. After dipping the tube in water, or lubricating it with oil or vaseline, according to the whim of the operator, it is introduced into the nostril by the left hand, and gradually pushed up on the floor of the nasal chamber towards the throat. While doing this I gradually rotate the tube, trying to get the end to point upwards, so that it may miss the larynx and enter the gullet, but some operators claim that this is unnecessary. In some horses one finds that the tube is quickly swallowed, and is soon visible from the outside of the neck; in others it seems to come up against bone and cannot be got over, no matter how one tries, and in yet other cases it goes down too easily, and is not visible from the outside. In the cases in which it sticks I generally try the off nostril and frequently find it goes down quite easily then, but in a few cases it will not go on this side either, and then I try my smaller tube. In a very small percentage of cases, however, it does not seem possible to get a tube down in any way by the nasal route, and then I either use the oral route with a gag in the horse's mouth, or otherwise give up the attempt altogether, which is perhaps a not very dignified proceeding. In the cases in which the tube goes in too easily and cannot be seen in the jugular furrow, it has most likely gone into the trachea, therefore I pull it out until the first mark is outside the nostril, and then proceed to repeat the operation, when it will often go down the right way. I have known cases, however, in which the tube has gone into the trachea two or three times before I could get it into the gullet, and here I would emphasise that a cough is not diagnostic in such cases, as one may or may not get a cough with the tube in the trachea, and then again one may get a cough with the tube in the gullet, due, I suppose, to irritation while passing over the larynx. I never pump until I see the tube go down the jugular furrow in horses, but in cattle it is not easy or possible to see this, and other means have to be employed to verify the position of the tube.

My procedure with cattle is rather different from that with horses, and I generally try the right nostril first. I have an attendant grasping the horns from the back at the right side, and tuck the cow's head under my left arm, with the left hand either in the mouth or under the cow's jaws. I often find the cow is quieter with

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the hand in the mouth, as it gives her something to lick at. I then introduce the tube with the right hand, and the rest of the procedure is much the same as in the horse, except that one cannot see the passage of the tube down the neck. To verify the position of the tube in the cow, it is necessary to ascertain if the rumen gases are coming up and escaping by the tube. It is considered by some to be diagnostic if a crackling sound is heard in the tube, as this indicates the escape of gases, but it has always seemed to me that this might also indicate the escape of air, and I have never pumped until I have definitely smelt the sour stomach gas. This is sometimes a matter of patience, as a lot of gas may seem to come off which is quite odourless, but if one persists one may generally be rewarded by a whiff of real sour gas, and then one feels more secure in pumping in fluids.

Now I will endeavour to give a few brief experiences of the use of the tube in horses and cattle.

In horses it is a frequent experience to get hæmorrhage from the nose, but this can be avoided in most cases if one pushes the tube gently, without using much force, but rather trying the other nostril or a smaller tube if the obstruction seems serious. I have occasionally had hæmorrhage in cattle, too, but in neither cattle nor horses has it ever proved serious, and it soon ceases.

One of my strangest experiences was in using the tube in a two- or three-year-old filly. When I was looking for it on the near side of the neck, someone called out that it was on the other side, and sure enough it went down the off side of the neck. I concluded that the gullet was on the off side, and proceeded to pump the fluid in, happily with no untoward effects.

Of course, in speaking of a stomach tube to a medical man, he takes one to mean a tube used almost solely for taking fluids off the stomach, but in veterinary practice the opportunities for this use are rather limited, and the tube has come to be used largely as a method of introducing either large quantities of drugs into the stomach, or smaller quantities of powerful drugs which could not be given by mouth, owing to the danger of scalding the mucous membrane. However, I once had a very successful experience of the legitimate use of the tube, and succeeded in taking about six gallons of liquid food from a horse's stomach. This was an obvious case of gastric impaction, with the horse showing great distress, and liquid food trickling out of the nostrils. I passed the tube, pumped in about a quart of water, withdrew the tube a few inches, and then pushed it well in, when I was rewarded with this flow of food. I then followed with my usual treatment for impaction, *i.e.*, small repeated doses of physostigmine and arecoline with ammon. carb. and nux. vomica in draughts, and the horse made an uneventful recovery.

In cases in which large doses of medicine are given by tube, this usually consists of salt and formalin; half a pound of the former and an ounce of the latter for horses, in three or four gallons of water, and double the amount of salt and formalin for cattle.

For cases of constipation in horses, in which very little pain is shown, this treatment is ideal, and one may go home with the certainty that no further treatment will be required, but in cases of impaction showing a fair amount of pain, I prefer the small repeated doses of physostigmine and arecoline together with ammon. carb. and nux. vomica, keeping the tube for cases in which this treatment fails. This is because I have thought that the introduction of the large quantities of fluid has rather aggravated the pain and brought on inflammation of the bowels, but then, again, in many a case in which the other treatment has failed, the tube has affected a cure.

In cases of choking in horses I have used the tube successfully, usually trying to push the obstruction gently on, and if this has not succeeded, withdrawing the tube a little and giving a pump or two of water or oil. In one case of choking by linseed cake, I managed to withdraw a good deal of the cake in the lumen of the tube by pushing it in once or twice, and then I pumped some water in to clear the gullet. In another case in which I was called in consultation by Colonel Johnson of Nottingham, we were able fairly accurately to diagnose a case of distension of the œsophagus by means of the tube.

Other conditions for which I have found the tube useful are lymphangitis, the early stages of laminitis, and any cases of blood poisoning. I have found it to act sometimes in severe cases of lymphangitis, where no amount of physic or local dressing has seemed to have any effect, and for any cases of septicæmia I think the salt and formalin treatment by tube is ideal. I once had a stud of horses ill with a very virulent form of laryngitis, and one horse was particularly bad for several weeks. I had used all the well-known remedies, in addition to nuclein and vaccine, but I could not get him to eat, or keep his temperature down for more than one day, in addition to which he was swollen in all four legs as well as along the belly and breast. I did not think I could pass the tube, owing to the condition of the throat, but I decided to try and managed to get it down and give the salt and formalin in water. I repeated the dose in two days; his temperature stayed down and he started to eat and do well.

I have also used the tube for the administration of either carbon tetrachloride or carbon bisulphide for worms or bots in horses, with fairly successful results, and on one or two occasions I have fed horses for a few days with thin gruel by the tube, chiefly in cases of injury to the jaw.

In cattle the tube is extremely useful, but has to be used with more care than in horses, as there is not a direct passage through the stomach, and one may fill the organ too full.

I once tried it for Johne's disease, and thought I had a sure cure, as the cow stopped scouring, ate well and grew, but she started to scour again in three weeks. I tried it again and I thought the cow seemed to be getting rather upset as we pumped, as she frothed at the mouth, but I kept on. When we had finished she staggered in the stall, so we let her out, when she staggered for a minute or two and then fell dead. On *post-mortem* there was nothing on the lungs, and I concluded that I had filled her stomach too full and caused staggers. That has taught me a lesson with cattle, and I always leave off if they show signs of distress, as some cows will, after only a pump or two.

I do not like the use of the tube for impaction of the rumen, as I have thought that its use has been the cause of acute inflammation and death, but for septicæmia after

calving it is, in my opinion, almost a specific. I have had a case in the afternoon with temperature 106° and pulse 100 and have pumped in two pounds of salt and two ounces of formalin in four gallons of water, and have found the cow absolutely normal the next morning.

Discussion.

Mr. E. Wilkinson, in opening the discussion, congratulated Mr. Cockburn on his interesting paper. He said that he had not drenched a horse for the last two years. He thought the tube was an advantage if only for the saving of time and the saving of clothes. He was interested to see Mr. Cockburn's tube, as it was smaller than the one he was in the habit of using. His technique in cattle was different from that of Mr. Cockburn in that he always used the left and not the right nostril. He thought that the tube was of real use in cases of choking and in gastric tympany. In the former case he pulled the horse's head down to the ground, when it was usually easy to wash out the offending body. In gastric tympany it immediately relieved the condition. He could confirm Mr. Cockburn's remarks in regard to treating lymphangitis by the tube. He had also had success in cases of acute rheumatism.

Mr. J. C. Deville stated that years ago he had successfully unchoked a hunter by using an ordinary catheter and he suggested that the ordinary probang could be utilised for introducing fluids, etc., in cattle.

Mr. J. McArthur said that his experience of the use of the tube in cattle was confined to the oral route (using the wooden gag) which he thought would be more simple than by the nasal route.

Mr. Abson enquired of the essayist if he had ever ruptured the œsophagus, as he had in mind a case where the operator did so.

The Hon. Secretary (Mr. O. V. Gunning) congratulated the speaker on his paper. He noted that Mr. Cockburn recommended water or oil as a lubricant. In his experience it was well to have the tube well lubricated. He had found Sapolav (Wyley) very good for this and latterly he had used lubricant jelly, as employed for lubricating catheters, etc., and found it materially aided the passing of the tube. With the thick coat in winter it was often very difficult to see the tube going down, and as a safeguard he always made a practice of feeling it and usually letting the owner feel it too. As a matter of fact, however, one could always tell by the resistance if the tube was going correctly. It slid down the windpipe without any resistance. He (the speaker) always liked to feed it down in swallows when there was undue resistance, as there was a danger of making the nose bleed if it was pushed with force. Again, he always removed it inch by inch as it was very easy to get hæmorrhage in removing the tube rapidly, as the end came over the swallow when it seemed to strike the turbinated bone. He had used it considerably in cattle by the mouth, but had come to the conclusion that it was much more simple to give the salt and let the animals do the drinking themselves, but he used a very large bore hose pipe if he wished to syphon out the bovine stomach. The tube was of great value in giving nourishment to horses during debilitating diseases when they gave up feeding. He understood that in a U.S. Army Veterinary Hospital they gave two gallons of gruel with a stiff dose of alcohol daily, and he had used this formula with success. The use of the tube was also of value for red worms in horses and he thought this was the only real way to get rid of them. He bought his tubing locally, cut it into lengths, and found motor hood paint excellent for making the marks.

In foals from a day old upwards he used a flexible bull catheter, obtained from Chicago, and found it worked very well. He was surprised to hear of the tube being used to remove choke in horses as he had always found the choke would remove itself if one left the animal long enough. He recommended those present to read an article on choke by Steffen in "Special Veterinary Therapy." If a horse did a lot of coughing when passing the tube, he always suspected his wind.

In reply, Mr. Cockburn said he was interested in hearing Mr. Wilkinson's remarks about choking, but he thought his method rather drastic. He agreed that it was very useful in gastric tympany. Replying to Mr. Deville, he thought the latter would find the tube much easier to pass and more convenient to use than the probang for the same purpose, while he was of opinion that Mr. McArthur would find the nasal route much more easy and requiring less help than by the mouth. Replying to Mr. Abson, Mr. Cockburn thought there should be no risk of rupturing the œsophagus in a normal animal. With regard to cough, it did not make any difference if the tube was in the trachea or gullet—the animal might or might not cough. Cough was by no means diagnostic of the presence of the tube in the trachea. Replying to Mr. Gunning, the essayist admitted that it was difficult to see the tube going down, but he had never experienced hæmorrhage when pulling it out. With regard to cattle, he did not think that drinking the water for itself would have the same value for the animal as pumping it in: for one thing, it was impossible to put formalin in the water, a procedure which was of great value in some conditions and almost a specific in certain cases of metritis.

He was surprised that Mr. Gunning never treated choke in horses, for he was sure that there were cases which, if left, would be unable to pass the offending substance.

R.C.V.S. Library.

The undermentioned additions have recently been made to the Library of the R.C.V.S.:—

"The Early History of Surgery in Great Britain," Parker, 1920; *"Four Species of Range Plants (American) not Poisonous to Livestock," U.S. *Bulletin*, 1928; *"Calcium and Phosphorus in the Metabolism of the Lactating Animal and Factors that influence their Assimilation," Orr, Rowett Research Inst.; *"The Influence of Diet on the Physiology of the Stomach," Orr, Rowett Research Inst.; *"A further contribution to the Subject of Aplastic Anæmia," McGowan, Rowett Research Inst.; *"Some Observations on the Effects of Ether Anæsthesia," Magee, Rowett Research Inst.; *"Factors affecting the Iron and Manganese Content of Plants, with special reference to Herbage causing 'Pining' and 'Bush Sickness,'" Godden and Grimmett, Rowett Research Inst.; *"The Prevention of Distemper," Dunkin and Laidlaw, reprint from *The Field*; "The Intradermal Tuberculin Test in Cattle. Collected Results of Experience," Buxton and McNalty, Medical Research Council, 1928.

* Reprints.

Any of the above-mentioned works may be borrowed from the Library by members of the College on payment of postage both ways. Applications should be made to the Librarian, R.C.V.S., 10 Red Lion Square, London, W.C.1.

Cattle Inspection in Gloucestershire.

At a recent meeting of the Gloucestershire Agricultural Committee, the Diseases of Animals Sub-Committee reported that under the Tuberculosis Orders, 1925, the Milk and Dairies (Consolidation) Act, 1915, and the Milk and Dairies Order, 1926, the total number of cattle examined during the first general inspection for the year 1928-29 was 44,648. This number was made up of 38,083 cows-in-milk and 6,565 dry cows-in-calf. The figures for the first general inspection of 1927-28 were 44,988 (39,706 and 5,282). Of the 44,648 dairy cows examined the number suspected to be suffering from any of the diseases specified in the Tuberculosis Orders or the Milk and Dairies Act and Order was 445, or ·99 per cent. Of the suspected cases, tuberculosis in its scheduled forms accounted for 179, all of which were confirmed on *post-mortem*. The disease could be grouped as follows: Tuberculosis (as defined in the Orders), 179 or ·40 per cent.; suppuration of the udder 184 or ·41 per cent.; all other diseases, 82 or ·18 per cent.

The Mechanism of Cellulose Digestion in the Ruminant Organism.

II. The Transformation of Cellulose into Glucose by the Agency of Cellulose-splitting Bacteria.*

By H. E. Woodman, M.A., Ph.D., D.Sc., and J. Stewart, M.A., B.Sc.
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Introduction.

An attempt was made in a recent communication[1] to propound a theory in connection with the digestion of cellulose in the ruminant organism which should be compatible with Kellner's findings as to the value of digestible fibre in the fattening of ruminants. It was shown that the generally accepted theory, that cellulose is digested by bacterial agency in the rumen with the production of organic acids and gaseous products, such as methane, hydrogen and carbon dioxide, failed entirely to account for the equal values of digestible fibre and starch for fat production in the ruminant animal. This could only be explained by assuming that glucose (or some other sugar capable of hydrolysis to glucose) was formed as a primary product of the action of bacteria on cellulose, and that, as with digestible cabohydrates originally present in the food, only about 8 per cent. of the sugar so formed underwent further bacterial breakdown into organic acids and gases, the remainder being available for absorption into the organism in the form of glucose. On this assumption, it would follow that every gram of fibre so digested would yield to the organism as much glucose as would a gram of starch, and in this way Kellner's practical finding would be capable of explanation.

It was clear, however, that the tenability of such a hypothesis depended upon the production of evidence to support the view that glucose arises as an intermediate product when cultures of cellulose-fermenting bacteria are brought into contact with cellulose in artificial media. The only available evidence was that forthcoming from the results of investigations carried out by Pringsheim[2], who, by the controlled action of cellulose-splitting micro-organisms on filter paper, was able to prove the presence of both glucose and cellobiose in the reaction mixture. This result suggests a parallelism between the mode of digestion of starch by enzymes and that of digestion of cellulose by bacteria, such as is shown by the following scheme :—

Enzyme digestion :—

Starch—> maltose (glucose-α-glucoside)—> glucose.

Bacterial digestion :—

Cellulose—> cellobiose (glucose-β-glucoside)—> glucose.

It was felt, however, that it would be unsafe to base the new theory of cellulose digestion on the findings of a single investigation. Moreoever, some doubt appears to have been cast on the results of this old German investigation by authorities in this country, and although many workers have, in recent years, prosecuted researches into the gas-producing powers of cellulose-fermenting organisms, no one has attacked the problem from the standpoint of glucose production from cellulose by such agency. It appeared desirable, therefore, that further work should be carried out along the lines of Pringsheim's original experiments. This, accordingly, has been done, and it may be stated quite briefly at this point that no difficulty has been experienced in confirming Pringsheim's results.

*Reprinted from the *Journal of Agricultural Science*, Vol. XVIII. Part IV.

Isolation and Description of Cellulose-splitting Micro-organism.

The following medium† was used for starting the culture:

Calcium carbonate	1.20 gm.
Sodium phosphate	0.50 ,,
Ammonium sulphate	0.25 ,,
Potassium chloride	0.10 ,,
Tap water	100 c.c.

As a source of cellulose, filter paper, torn by hand into small pieces and then well pulped in boiling water, was used, 2 gm. being added for each 100 c.c. of medium. The salts were weighed out separately into a small flask and the filter paper and 100 c.c. of tap water added, the flask and its contents being then sterilised in an autoclave. The contents were then sown with about 5 gm. of well-rotted dung from an old heap consisting mainly of horse dung. The flask was then placed in an incubator at 65° C. The fermentation which then took place was almost identical with that described by Viljoen, Fred and Peterson[3]. After about 24 hours' incubation, gas bubbles began to rise to the surface of the liquid. After 36 hours gas formation became so considerable that the bulk of the filter paper was carried to the surface of the liquid, forming a "head." At this stage the pulp had turned yellowish brown in colour, and when the fermentation was complete, which was usually the case after five to seven days, the "head" dropped, and the residue consisted of a yellowish brown sediment, calcium carbonate, bacterial residues and some unchanged filter paper. Transfers of 5 c.c. portions were then made to fresh flasks of cellulose and medium, and by this method of sub-culturing every seventh day, a pure culture of micro-organisms was soon obtained. Growing the organism at 37° C. was attempted unsuccessfully, and all the subsequent incubations were therefore carried out at 65° C.

The peculiar fact was noted that if, in preparing the cellulose for the media, the filter paper were cut with scissors, instead of being torn by hand, then the subsequent fermentation was delayed by about 48 hours. This was doubtless due to the circumstance that the frayed edge of the hand-torn filter paper was more readily attacked by the bacteria than the straight edge of the scissors-cut paper.

No difficulty has been experienced in preserving the activity of the cellulose-splitting micro-organisms by the method of sub-culturing described above. At the time of writing, the fifty-second transfer is being made, and the cultures have shown no diminution whatsoever in their power of fermenting the pulped filter paper.

The following is a short morphological account of the organism thus isolated‡. It is a large bacillus with rounded

†This medium was used at the suggestion of Dr. Harold Raistrick, to whom the writers are also indebted for much useful information and advice in the initial stages of this investigation.

‡The writers are indebted to Mr. R. E. Glover, B.Sc., M.R.C.V.S., and Mr. R. L. Cornell, B.Sc., M.R.C.V.S., of the Institute of Animal Pathology, Cambridge, for carrying out the examination of the morphological characteristics of the organism.

extremities, measuring 4 to 7 microns in length and one micron in breadth. The organism stains with the usual aniline dyes and is Gram positive. In liquid cultures, the bacilli appear in short chains of from two to eight elements. The organism forms spores. Motility could not be detected, but flagella could be shown by Fontana's method, the flagella being peretrichous. Growth occurs in the usual media, nutrient agar, nutrient broth, etc., at a temperature of 60-65° C. No growth took place at 37° C. or at room temperature. Optimum growth was obtained under ærobic conditions, but the organism is a facultative anærobe, as growth occurs in tubes of liver broth under paraffin.

The organism exhibited no growth on solid media under completely anærobic conditions. It is non-proteolytic, tubes of meat broth and coagulated egg albumin showing no change after seven days' incubation. Colonies on agar appear after twenty-four hours' incubation. They are opaque, glistening white with dark centres and irregular edges, measuring 6 to 10 m.m. in diameter.

The fermentation reactions were studied by adding a plain broth culture to peptone water containing one per cent. of the different sugars. Acid, but no gas, was produced with cane sugar, fructose, glucose, maltose, arabinose, mannite, inulin, dextrin and glycerol, no change occurring with lactose, dulcite, salicin or litmus milk. Indol was not produced in peptone water. So far, however, the sugar fermentations have not been carried out in cellulose media.

Experimental Part.

Exp. 1. 100 c.c. of tap water and the usual mixture of salts, together with 2 gm. of pulped filter paper, were introduced into a small flask, the customary precautions being taken. To the mixture was then added 5 c.c. of the active culture, and the flask was placed in a 65° C. incubator for five days, until the "head" which formed had completely disappeared. The contents of the flask were then filtered, and the filtrate, after concentration to a small bulk *in vacuo* at 45° C., was tested for the presence of reducing sugar by means of Fehling's reagent. A negative result was obtained.

The writers had occasion to repeat this experiment on numerous occasions. In every case the result was negative. Negative results were also obtained in similar experiments, when the contents of the flasks were tested for reducing sugar at intervals of twenty-four hours during the progress of the fermentation. If, therefore, sugar is formed as an intermediate product in the breakdown of cellulose, then it is, under the conditions of such tests, broken down very readily by the further activity of the bacteria, a behaviour which is quite in accordance with anticipation, since it had previously been shown that the organism is able to bring about a ready fermentation of glucose.

Exp. 2. A number of tests was now made in which the fermentation process was allowed to take place at 65° C. in collodion sacs, the latter being immersed in distilled water during the process. It had previously been ascertained that the organism was without action on collodion. The object of these tests was to discover whether it was possible to bring about a separation, by dialysis, of a portion of the sugar which might arise as a transient phase during the fermentation. The surround of distilled water was renewed every twenty-four hours, and tests were made for reducing sugar in the water after its removal.

In only three out of twenty such tests were results of a positive nature obtained, the water surrounds removed after three days' incubation in the successful experiments displaying a slight reducing action towards Fehling's reagent. The unsatisfactory results in this series of tests may indicate that the rate of diffusion of sugar through the collodion membrane was appreciably slower than the rate of secondary fermentation of glucose. It must also be taken into account that the concentration of salts in the medium was altering continuously as a consequence of diffusion, and that this circumstance may have had a pronounced effect on the course of the fermentation. Nevertheless, it might be possible, by effecting improvements in technique, to obtain a more successful isolation of sugar by dialytic methods than was experienced in the present tests.

Exp. 3. To 10 gm. of pulped filter paper and 500 c.c. of the usual culture medium was added 15 c.c. of an active culture of the cellulose-splitting organisms. The flask and its contents were then placed in an incubator at 65° C. for three days. When the fermentation reaction was at its height, 40 c.c. of toluene was added with shaking. The flask was then placed in a 37° C. incubator for five days. At the end of this time the contents of the flask were filtered and evaporated to a small bulk *in vacuo* at 45° C. The concentrated liquid was then freed from separated salts by filtration.

The filtrate reduced Fehling's solution readily and copiously. When warmed in boiling water with phenylhydrazine and acetic acid, a copious yellow crystalline separation was effected from the hot solution in a few minutes. After continuing the heating in the water bath for 45 minutes, the crystallisation was allowed to proceed overnight at room temperature. The separated material was then filtered off, dissolved in hot dilute pyridine and the solution filtered. On cooling, crystals separated which had the beautiful characteristic appearance of glucosazone under the microscope.

It should be stated that this experiment was repeated time after time, always with the same positive result. Care was taken to ascertain whether any sugar other than glucose was present in the medium after filtration and concentration. In none of the tests with phenylhydrazine could any osazone other than that of glucose be detected.

Exp. 4. Four separate tests similar to that described under Exp. 3 were set going in the 65° C. incubator, this procedure involving the use of 40 gm. of pulped filter paper. Toluene was added in every case when the reaction was at its height, and the flasks were then left for a further five days in the 37° C. incubator. The filtrates from the separate fermentations were combined and evaporated completely to dryness *in vacuo* at 45° C.

The dry residue was next extracted three times with boiling rectified spirit, and the filtered extract was reduced to about 25 c.c. by evaporation *in vacuo* at 45° C. The concentrated liquid reduced Fehling's solution with great readiness, and as little as three drops was sufficient to enable a characteristic specimen of glucosazone to be obtained.

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The concentrated alcoholic extract was poured into a shallow glass vessel and the alcohol completely removed *in vacuo* at the ordinary temperature. The residue weighed 4.2 gm. and consisted of a stiff, caramel-like, hygroscopic mass, which displayed no tendency to become crystalline on standing for a fortnight in a desiccator. It possessed very strongly the powers of reducing Fehling's solution and of giving a characteristic glucosazone with phenylhydrazine and acetic acid.

Exp. 5. A sample of crude fibre was prepared from oat and tare silage by the orthodox method of acid and alkali treatment. The procedure described under Exp. 3 was then repeated, the crude fibre of the silage being used this time to replace the filter paper as a source of cellulose. There was again no difficulty in demonstrating the formation of glucose from the cellulose, the filtered solution, after concentration *in vacuo*, reducing Fehling's solution readily and yielding glucosazone with phenylhydrazine and acetic acid.

Comments on Exps. 3 and 4.

The results of these experiments demonstrate the possibility of obtaining glucose from cellulose by controlling the activity of cellulose-splitting organisms. At the stage of fermentation when toluene is added, no glucose is present in the medium (see Exps. 1 and 2). As the addition of toluene inhibits the further activity of living organisms, it must be presumed that the glucose which arises during the second stage of the fermentation is the result of the activity of enzymes which have been elaborated and secreted by the organisms during the first stage of the fermentation ; or, alternatively, the addition of the antiseptic may lead to the liberation of such enzymes from an intracellular condition.

It appears necessary to assume therefore that the bacteria are unable to utilise directly, for metabolic purposes, the complex cellulose molecule, but must first cause this to be hydrolysed to the simpler form of glucose. This purpose is achieved by the agency of a cyto-hydrolytic enzyme and, possibly, of other enzymes, also, such as cellobiase. Here we appear to be dealing with a process of digestion comparable with that associated with higher organisms. Under normal conditions of fermentation, the glucose so formed would readily be assimilated and utilised by the micro-organisms for metabolic purposes, the end-products of such metabolism being organic acids and gases like methane and carbon dioxide. The addition of toluene, however, at the "head" stage of the fermentation rules out the possibility of any further metabolic activity of this character on the part of the organisms, so that any glucose formed in the second stage of the reaction by the continued activity of enzymes is enabled to escape destruction.

The results of Exps. 3 and 4 may be taken as deciding the main point at issue, namely, that glucose arises as an intermediate phase in the destructive fermentation of cellulose by bacterial agency. Although the writers have not so far devoted much attention to the quantitative aspects of the reaction, there can be no doubt that the yield of glucose under the conditions of these initial experiments is quite small. This, however, does not preclude the possibility of discovering conditions under which the yield of glucose might be increased considerably, in which case the reaction might conceivably acquire a technical significance, as, for instance, in the production of power alcohol. Once a reaction has been shown in the first place to be possible at all, it is frequently merely a question of studying in detail the various controlling factors in order to transform it from a low-yielding to a high-yielding process. The main object of this preliminary study, however, has been to test a point in theory rather than to secure results of an economic nature, and some time must necessarily elapse before the writers will be in a position to deal with the reaction from the quantitative and economic aspects. Meanwhile, it may be of interest to record some further observations which were made during the course of the work, since, although these are put forward somewhat tentatively at present, they nevertheless indicate the directions in which further investigations might profitably be pursued.

It was noted that the total amount of filter paper which was fermented away in the reaction was never anything like so considerable when toluene was added at the "head" stage as when the fermentation was allowed to proceed uncontrolled at 65° C. Under the last-named conditions, almost the whole of the filter paper underwent fermentation ; under the conditions of toluene control, however, only 30-40 per cent. disappeared. Indeed, it appeared as if little or no further destruction of filter paper took place in the second stage of the fermentation after the addition of toluene. It is possible, therefore, that the enzymes present in the second stage are concerned in producing glucose from partially hydrolysed cellulose, and that the primary cyto-hydrolytic process is dependent on the presence of the living organisms. This hypothesis, which would explain the low yields of glucose obtained in the reaction, would further account for the negative results, in respect of signs of fermentative activity and glucose formation, which were noted when filter paper was incubated with the liquid resulting from filtering a culture of the organisms at the "head" stage through a bacterial candle. On the other hand, however, it may be that a temperature of 37° C., at which the second stage of the incubation was carried out, is not the most favourable for the primary splitting of the cellulose complex by the cytase enzyme. In this connection, it will be recalled that attempts to grow the organism in the usual culture medium at 37° C. were unsuccessful. It may be also mentioned that the most successful experiment, in respect of glucose formation, in the present series was one in which the second stage was allowed to proceed at 65° C. instead of 37° C. Obviously the temperature factor is of considerable importance, and this phase of the question will be the object of further study.

Although negative results, in respect of glucose formation, were obtained in experiments in which the fermentation of filter paper was permitted to proceed unchecked at 65° C. until the "head" had disappeared, it was thought that, as the presence or absence of glucose at any given stage must depend on the relative rates at which it was being produced and destroyed in the two phases of the fermentative action, it might be possible under certain circumstances to detect the presence of traces of glucose in the culture without having recourse to the use of toluene. Several tests were carried out in which the fermentation at 65° C. was allowed to proceed to the

"head" stage, at which time the flask was removed from the incubator and its contents examined, by the usual methods, for the presence of glucose.

As might be expected, the results obtained in such tests were not consistent. In one or two cases, however, the filtered and concentrated culture liquid displayed a faint reducing action towards Fehling's reagent, though whether this was due to traces of glucose, or to some other aldehydic substance, was not ascertained.

As it had not been found possible to grow the organism successfully at a temperature of 37° C., though this temperature had been found satisfactory for glucose formation in the toluene-controlled stage, there seemed grounds for believing that if the flask and its contents were removed from the 65° C. incubator at the active "head" stage and placed in the 37° C. incubator, then the gas-producing mechanism of the organisms might be impaired or even put out of action, so that a portion at least of the glucose arising from continued enzymic activity might be saved from further breakdown. Again, however, the results obtained from tests of this character were indecisive, although, in one or two instances, distinct signs of reducing power towards Fehling's solution were noted. One special set of observations is worthy of record on account of its possible significance. The filter paper fermentation was started at 65° C. in the usual way. The flask was removed at the "head" stage and, without addition of toluene, was kept for a further 24 hours at room temperature before proceeding with further tests. The contents were then filtered, and, after concentration *in vacuo*, were tested with Fehling's solution. A surprisingly strong reduction was noted, a result quite out of keeping with the observations in similar experiments, where the reducing action towards Fehling's solution had been, at best, quite faint. On enquiry, it was discovered that, during this particular fermentation, the temperature of the 65° C. incubator, by some mischance, had risen to 75° C. for a period of twelve hours. The influence of this higher temperature may therefore have led possibly to an enfeebling of the gas-producing mechanism, whilst not impairing the mechanism responsible for the production of glucose from the cellulose. The obvious line of enquiry suggested by this peculiar result will be followed up in future work.

Further experiments were undertaken with a view to finding out whether the organism was able to retain its power of fermenting cellulose after a period of sub-culturing in media devoid of cellulose. The organism was grown at 65° C. on a solid medium (plain agar) and, after thirteen successive transfers on this medium, was introduced into peptone broth. After eight successive transfers in the broth medium, 10 c.c. of the broth culture, representing sub-culture 21 in non-cellulose media at 65° C., was added in a flask to 2 gm. of pulped filter paper and 100 c.c. of the usual culture medium. The flask was then placed in the 65° C. incubator. No signs of any fermentative action were observed, even after the lapse of several days. It would appear therefore that continued sub-culturing of the organism in the absence of filter paper leads to a pronounced modification of its functional powers. It seems probable that this loss of cellulose-fermenting power is due to a gradual atrophy of the function which enables the organism, under normal circumstances, to produce glucose as a primary product from cellulose. If this be so, additional support is given to the view that such cellulose-fermenting bacteria possess a dual mechanism, whereby, firstly, they hydrolyse cellulose to glucose, and secondly, ferment the glucose to organic acids and gases.

It has been demonstrated that when the fermentation of cellulose by bacteria is controlled by the addition of toluene at the "head" stage, this is followed by the appearance of small amounts of glucose. The main question remains to be settled, however, as to the nature of the mechanism which controls the bacterial action on digestible fibre in the rumen of the animal. Here the controlling factor is so efficient that something like 92 per cent. of the digestible cellulose becomes available to the animal in the form of glucose, and only about 8 per cent. undergoes complete fermentation to gases and organic acids. Surprise may be felt that so little of the glucose formed by bacterial action should undergo further breakdown; yet this is scarcely more surprising than that only about 8 per cent. of the digestible carbohydrate (starch, sugar, etc.), *originally* present in the food, undergoes such destructive fermentation.

Further investigation will be necessary before the changes which occur in the rumen of the animal can receive adequate explanation. In the earlier paper[1], it was suggested that the extent of destructive fermentation of both cellulose and carbohydrate is determined by the energy requirements of the micro-organisms. On the other hand, if the primary conversion of cellulose into glucose is brought about by enzymes elaborated by the bacteria, there is no reason why this hydrolysis should be so regulated as to produce just sufficient, and no more, glucose as will satisfy the metabolic requirements of the micro-organisms. Bearing in mind the catalytic properties of enzymes, and their capacity for carrying out their functions independently of the living organism, it is not unreasonable to picture a continuous production of glucose from cellulose in the rumen quite irrespective of the limited requirements of the micro-organisms, which may be regarded solely, in this connection, as elaborators of the requisite enzymes. That glucose is actually formed from cellulose in the rumen on an *almost quantitative* scale is abundantly proved by Kellner's work on the fattening value of digestible fibre in the ruminant animal. The hypothesis put forward above as to how this occurs must, however, remain speculative until more supporting evidence has been obtained from work in artificial media than has been accumulated up to the present.

The possibility that the gas-producing activities of the micro-organisms may be circumscribed by the resulting increasing acidity of the rumen contents is one which should also be kept in mind. Preliminary experiments conducted by the writers have indicated that small amounts of glucose may arise in the culture medium, when the latter is brought to a definite H ion concentration by the addition of acetic acid at the "head" stage of the fermentation. The writers hope to report more fully on this and other aspects of the subject at some future date.

REFERENCES.

[1] WOODMAN (1927). *J. Agric. Sci.* 17, 333.
[2] PRINGSHEIM (1912). *Zeit. f. physiol. Chem.* 78, 266.
[3] VILJOEN, FRED and PETERSON (1926). *J. Agric. Sci.* 16, 1.

R.C.V.S. Obituary.

ARMOUR, Robert Lyle, Warwick Street, Carlisle. Graduated, Edinburgh, 14th December, 1912. Died, 2nd February, 1929, aged 38 years.

LOCKWOOD, John Henry, Winchester Road, Andover. Graduated, London, 18th December, 1891. Died, 4th February, 1929, aged 60 years.

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THE LATE MR. R. L. ARMOUR, M.R.C.V.S.

"The death occurred on Saturday," says the *Carlisle Journal* of 5th February, "of Mr. Robert Lyle Armour, Warwick Road, Carlisle, who carried on the practice of veterinary surgeon under the title of Messrs. Hewson and Armour. He was a native of Ballymoney, co. Antrim, and came to Carlisle about seventeen years ago as assistant to Mr. J. W. Hewson. During the war he held a commission in the Royal Army Veterinary Corps, and retired with the rank of Captain. On his return to this city he went into partnership with Mr. Hewson, and about five years ago took over the business. Mr. Armour, who was thirty-eight years of age, leaves a widow and two daughters."

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THE LATE MR. W. A. MACGREGOR, M.R.C.V.S., AYR.

The *Glasgow Herald* of 4th inst., contains the following reference to the death of Mr. MacGregor, which was announced in our last issue :—

"The death took place at Ayr yesterday, following influenza, of Mr. W. A. MacGregor, veterinary surgeon, Ayr, who was widely known in the south-west of Scotland. Mr. MacGregor was the son of the late Mr. James MacGregor, a Glasgow contractor. He was a half-brother of the late Mr. John MacGregor, the Rangoon timber merchant, who died in 1900 and by whose will a bequest of about £100,000 has become available for the poor of Glasgow. The late Mr. MacGregor had been in practice in Stranraer for about 13 years, and after a short term in Norfolk and Ipswich came to Ayr about 25 years ago. He had a long association with the Ayrshire Yeomanry as veterinary officer of the regiment, holding the rank of captain, and during the war he acted as veterinary surgeon at the Remount Department at Ayr under the Scottish Command. He was veterinary officer to the Scottish Board of Agriculture and the Board of Agriculture and Fisheries, and an honorary veterinary officer to the Western Meeting. Until recently he was a regular follower of the Eglinton Hounds, and was a keen angler and golfer. He leaves a wife, two sons and a daughter.

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THE LATE COLONEL SIR ALEXANDER SPROT, Bart, M.P.

It will be with deep regret that his many friends in the veterinary profession, both in and out of army circles, will learn of the sudden illness in the House of Commons, and subsequent death of Sir Alexander Sprot. His ever genial nature, his appreciation of veterinary service, and his unfailing desire to promote its interests, have earned a high place in our estimation. During the war, as Commandant at St. Omer, he was extraordinarily helpful in establishing the veterinary hospital at that place under Colonel T. Dunlop Young, and continued to take the greatest interest in its activities and the great rôle that it filled. At the conclusion of hostilities, also, when horses were required by the municipalities of Lille and other places, he very appropriately filled the position of Chairman of the Committee appointed for the selection of suitable animals. In recent years, during his service in Parliament, it seemed his particular pleasure to advance any question relating to horses and to agriculture matters generally, and our profession, which is bound up with agriculture, has suffered the loss of a sincere friend.

THE DANGEROUS DRUGS ACT, 1920.

Statutory Rules and Orders, 1928, No. 981—"Dangerous Drugs."

In pursuance of the powers vested in it by the Dangerous Drugs Act of 1920, the Home Office has issued the above pamphlet, which deals in detail, in eighteen regulations and three schedules, with the regulations appertaining to Section 7 of the Act.

Certain of these regulations are of particular interest to the veterinary profession, and below our readers' attention is drawn to those paragraphs which particularly affect them.

REGULATION 2.

A person shall not supply or procure, or offer to supply or procure, to or for any person (including himself) and whether in Great Britain or elsewhere, or advertise for sale, a drug or preparation—

(*a*) unless he is duly authorised so to do ;

(*b*) otherwise than in accordance with the terms and conditions of his authority.

Veterinary surgeons are not included in this paragraph, as exceptions to these rules, which deal really with the supply to humans.

REGULATION 3.

(*a*) Authorises a registered veterinary surgeon who dispenses his own medicines to be in possession of a drug or preparation.

(*b*) A person shall be deemed to be in possession of a drug or preparation if it is in his actual custody or is held by any other person subject to his control or for him or on his behalf.

REGULATION 4.

(1) Where a drug or preparation is lawfully supplied to any person otherwise than by or on a prescription given by a duly qualified medical practitioner, the person supplying the drug shall not deliver to a person who purports to be sent by or on behalf of the recipient, unless that person either—

(*a*) is authorised under the Regulations ; or

(*b*) produces a statement in writing signed by the recipient to the effect that he is authorised to receive the drug or preparation. The supplier shall be satisfied that the document is genuine.

REGULATION 5.

In this Regulation authority is given to registered veterinary surgeons to possess and supply drugs.

REGULATION 7. Withdrawal of Authority.

Authority to possess may be withdrawn on conviction of an offence against the principal Act, and the Secretary of State may, by notice in the *Gazette*, withdraw the authority of that person concerned. If the person whose authority is withdrawn be a duly qualified medical practitioner, a registered dentist or veterinary surgeon, the Secretary of State may give notice in like manner direct that it shall not be lawful for that person to give prescriptions for the purposes of these Regulations.

REGULATION 8.

A person by whom a prescription is given shall comply with the following requirements. The prescription must—

(*a*) be in writing and signed by the person giving it with his usual signature and dated by him ;

(*b*) specify the address of the person giving it ;

(*c*) specify in the case of a prescription given by a veterinary surgeon, the name and address of the person to whom the article presented is to be delivered ;

(*d*) have written thereon, if given by a veterinary surgeon, the words—"For animal treatment only."

(*e*) specify, if it prescribes a preparation contained, or compounded of preparations all of which are contained in the British Pharmacopœia, the

British Pharmaceutical Codex or the Drug Tariff issued by the Minister of Health for the purposes of National Health Insurance, the total amount of the preparation or of each preparation, as the case may be, and in any other case the total amount of the drug to be supplied.

REGULATION 9.

(1) A person shall not supply a drug or preparation unless the prescription complies with the provisions of these Regulations relating to prescriptions.

(2) A prescription shall not be taken to authorise the preparation or drug to be supplied more than once, unless the prescription expressly states that it may, subject to the lapse of a specified interval or intervals. Under these conditions it may be supplied a second or a third time.

(3) The person dispensing a prescription shall, at the time of dispensing, mark thereon the date on which it is dispensed; this also applies to the second and third dispensing. He shall retain the prescription and keep it on the premises where it is dispensed, so that it may be available for inspection.

REGULATION 11. Keeping of Records.

(1) Every person authorised to supply drugs or preparations shall comply with the following provisions—

(*a*) he shall, in accordance with the provisions of this Regulation, keep a register and enter therein in the forms respectively set out in Part I and Part II of the Second Schedule to these Regulations true particulars with respect to every quantity of any drug or preparation obtained by him and with respect to every quantity of any drug or preparation supplied by him, whether to persons within or to persons outside Great Britain;

(*b*) a separate register or a separate part of the register shall be used with respect to each of the following classes of drugs and preparations—

(i) cocaine and ecgonine, and preparations containing cocaine or ecgonine;

(ii) morphine, and preparations containing morphine;

(iii) diacetylmorphine, and preparations containing diacetylmorphine;

(iv) medicinal opium;

(v) extracts or tinctures of Indian hemp;

(vi) dihydro-oxycodeinone, and preparations containing dihydro-oxycodeinone;

(vii) dihydrocodeinone, and preparations containing dihydrocodeinone;

(*c*) the required entry must be made on the day on which the drug or preparation is received or on which the transaction with respect to the supply thereof takes place, or, if that is not reasonably practicable, on the day next following the said day;

(*d*) a separate register shall be kept in respect of each set of premises at which the authorised person carries on business, and, subject to the approval of the Secretary of State, an authorised person may, if he thinks fit, keep a separate register for each department of the business carried on by him;

(*e*) no cancellation, obliteration or alteration shall be made of an entry in the register, and any correction of an entry must be made by way of a marginal note or a foot note which must specify the date on which the correction is made;

(*f*) the authorised person shall, on demand by the Secretary of State or by any person empowered in that behalf by order in writing by the Secretary of State, furnish to the Secretary of State or that person, as the case may be, such particulars as the Secretary of State or that person may require with respect to the obtaining or supplying by the authorised person of any drug or preparation or with respect to any stocks of drugs or preparations in the possession of the authorised person;

(*g*) the register may be used for the purpose of the entries required to be made under Section 17 of the Pharmacy Act, 1868, but save as aforesaid shall not be used for any purpose other than the purposes of these Regulations.

(2) So much of this Regulation as requires a person to enter in the register particulars with respect to drugs or preparations supplied by him shall not apply to—

(*a*) a duly qualified medical practitioner who enters in a day book particulars of every drug or preparation supplied by him to any person, together with the name and address of that person and the date of the supply, and enters in a separate book kept for the purposes of this Regulation a proper reference to each entry in the day book which relates to the supply of any drug or preparation; or

(*b*) a person keeping open shop for the retailing of poisons who enters in a separate book kept for the purposes of this Regulation a proper reference to each entry in a Pharmacy Act book which relates to the supply of any drug or preparation.

(3) References in the separate book must be made in chronological order and the book must be kept in separate parts relating respectively to each of the several classes of drugs and preparations specified in paragraph (1) of this Regulation, and must not be used for any purpose other than the purposes of paragraph (2) of this Regulation.

(4) The entry in the day book or in the separate book must be made on the day on which, but for this paragraph of this Regulation, an entry would have been required to be made in the register, and sub-paragraph (*e*) of paragraph (1) of this Regulation shall apply as respects any such entry.

(5) Every register, every separate book kept under the provisions of paragraph (2) of this Regulation, every day book in which any entry with respect to the supply of a drug or preparation is made and every Pharmacy Act book containing an entry which is referred to in the separate book shall be kept on the premises to which the register or book relates or where the prescription was dispensed, as the case may be, and so as to be at all times available for inspection.

(6) Every entry required to be made under this Regulation and every correction of such an entry must be made in ink or otherwise so as to be indelible.

(7) For the purposes of this Regulation—

(i) a drug or preparation administered by, or under the direct supervision and in the presence of a duly qualified medical practitioner or a registered dentist shall not be deemed to have been supplied by him;

(ii) "a proper reference" means a reference which is entered in the separate book under the same date as that on which the entry in the day book or in the Pharmacy Act book was made and is otherwise such as to enable that entry to be easily identified.

REGULATION 14.

All registers, records, books, prescriptions and other documents which are kept, issued or made in pursuance of the requirements or for the purposes of these Regulations shall be preserved in the case of a register, book or other like record, for a period of two years from the date on which the last entry is made therein, and in the case of any other document for a period of two years from the date on which it is issued or made.

REGULATION 17.

(1) In these Regulations, unless the context otherwise requires, the following expressions have the meanings hereby respectively assigned to them, that is to say—

"Authority" means—

(*a*) any licence issued by the Secretary of State under section twelve of the principal Act;

(*b*) any authority granted by the Secretary of State under that section; and

(*c*) any general authorisation conferred by these Regulations;

and the expression "authorised" shall be construed accordingly:

"Drug" means any drug to which Part III of the principal Act applies, other than benzoyl-morphine or a preparation, admixture, extract or other substance containing benzoyl-morphine, or a preparation within the meaning of these Regulations:

"Gazette" means the London Gazette and the Edinburgh Gazette:

"Health insurance prescription" means a prescription issued in connection with national health insurance and given on the form provided by the insurance committee;

"Keeping open shop for the retailing of poisons" means lawfully keeping open shop for the retailing of poisons in accordance with the provisions of the Pharmacy Act, 1868, as amended by any subsequent enactment;

"Pharmacist" means a duly registered pharmaceutical chemist or chemist and druggist;

"Pharmacy Act book" means either of the books required to be kept under section seventeen of the Pharmacy Act, 1868;

"Preparation" means any preparation, admixture, extract or other substance containing such a proportion of a drug (other than benzoyl-morphine) as is sufficient to make the preparation, admixture, extract or substance a drug to which Part III of the principal Act applies;

"Principal Act" means the Dangerous Drugs Act, 1920, and references in these Regulations to that Act shall be construed as references to that Act as amended by any subsequent enactment or as extended by any Order in Council made under subsection (2) of section eight of that Act.

(2) For the purposes of these Regulations but subject in each case to any limitation attached to his authority—

(*a*) a person authorised to manufacture a drug shall be deemed to be authorised to supply that drug; and

(*b*) a person authorised to supply a drug or preparation shall be deemed to be a person authorised to be in possession of, to procure, to offer to supply or procure, and to advertise for sale, that drug or preparation.

(3) The Interpretation Act, 1889, applies for the purpose of the construction of these Regulations as it applies for the purpose of the construction of an Act of Parliament.

REGULATION 18.

(1) These Regulations may be cited as the Dangerous Drugs (Consolidation) Regulations, 1928.

(2) These Regulations shall come into operation on the first day of January, nineteen hundred and twenty-nine.

(3) The Regulations set out in the Fourth Schedule to these Regulations are hereby repealed:

Provided that this repeal shall not affect any order made or any direction or authority given under the said Regulations, and every such order, direction or authority shall continue in force and, so far as it could have been made or given under these Regulations, shall have effect as if made or given thereunder.

SECOND SCHEDULE.

FORM OF REGISTER.

PART I.

Entries to be made in case of drugs or preparations obtained.

(The Class of drugs and preparations to which the entries relate to be specified at the head of each page in the Register.)

Date on which received.	Name / Address of person from whom obtained.	Amount obtained.	Form in which obtained.

PART II.

Entries to be made in case of drugs or preparations supplied.

(The class of drugs and preparations to which the entries relate to be specified at the head of each page in the Register.)

Date of transaction.	Name / Address of person to whom supplied.	Authority of person to whom article supplied to be in possession thereof.	Amount supplied.	Form in which supplied.	In case of supply on a prescription, the ingredients of the prescription.

THIRD SCHEDULE.

Preparations exempted from Regulations.

Cereoli Iodoformi et Morphinæ, B.P.C.
Emp. Opii, B.P., 1898.
Lin. Opii, B.P.
Lin. Opii Ammon, B.P.C.
Pasta Arsenicalis, B.P.C.
Pil. Hydrarg. c. Opio, B.P.C.
Pil. Ipecac. c. Scilla, B.P.
Pil. Plumbi c. Opio, B.P.
Pil. Digitalis et Opii Co., B.P.C.
Pil. Hydrarg. c. Cret. et Opii, B.P.C.
Pulv. Cretæ Aromat. c. Opio, B.P.
Pulv. Ipecac. Co., B.P. (Dover's Powder).
Pulv. Kino Co., B.P.
Suppos. Plumbi. Co., B.P.
Tablettæ Plumbi c. Opio, B.P.C.
Ung. Gallæ d. Opio, B.P. (Gall and Opium Ointment).
Ung. Gallæ Co., B.P.C.

FOURTH SCHEDULE.

Regulations Repealed.

The Dangerous Drugs Regulations, 1921(**a**).
The Dangerous Drugs Regulations, 1922(**b**).
The Dangerous Drugs Regulations, 1923(**c**).
The Dangerous Drugs (No. 3) Regulation, 1923(**d**).
The Dangerous Drugs Regulations, 1924(**e**).
The Dangerous Drugs Regulations, 1926(**f**).
The Dangerous Drugs Regulations, 1928(**g**).

(**a**) S. R. & O. 1921 (No. 865) p. 143.
(**b**) S. R. & O. 1922 (No. 1087) p. 171.
(**c**) S. R. & O. 1923 (No. 312) p. 209.
(**d**) S. R. & O. 1923 (No. 1095) p. 210.
(**e**) S. R. & O. 1924 (No. 1293) p. 235.
(**f**) S. R. & O. 1926 (No. 996) p. 367.
(**g**) Provisional Regulations, dated September 1st, 1928.

We have attempted to give the main points of these new Regulations, and how they affect the profession, but we would advise all our members to procure for themselves the pamphlet, which can be obtained from H.M. Stationery Office or through any bookseller. Price, 3d. nett.

PERSONAL.

Appointment.—Amongst the appointments made by the Secretary of State for the Colonies during January was that of Mr. T. D. Lloyd-Jones, M.R.C.V.S., D.V.S.M., as Veterinary Officer, Nigeria.

CLINICAL AND CASE REPORTS.

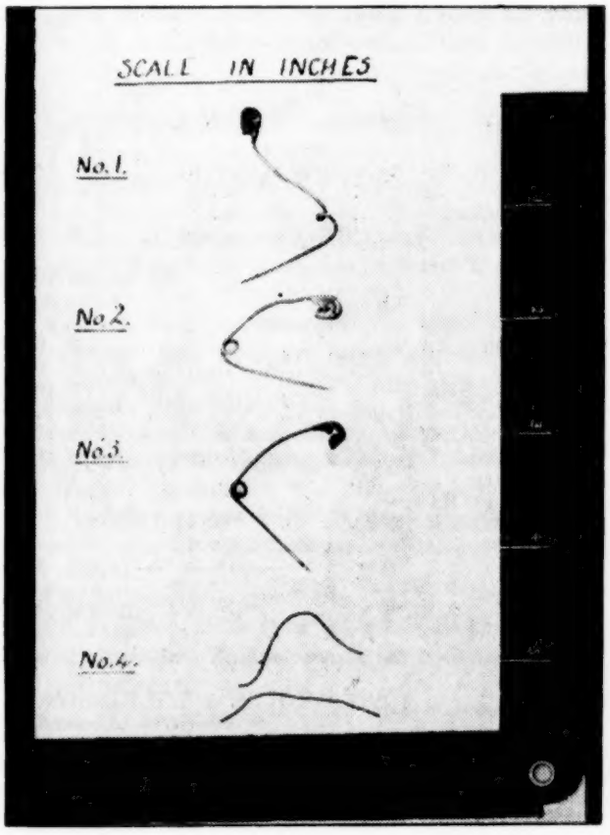
Foreign Bodies in the Rectum—Two peculiar Cases in Dogs.

By G. H. Wooldridge and J. W. H. Holmes.
Royal Veterinary College, London.

The following cases show what remarkable things can pass through a dog's alimentary canal, and they also stress the importance of a rectal examination.

Case I.—On the afternoon of October 17th, 1928, a wire-haired Fox-terrier dog was brought to the College, with the history that since the previous evening he had been making constant painful attempts to defæcate. There was a further history of the animal having been previously treated for distemper.

On observation, the animal appeared quite bright and showed no discharge from eyes or nose. Anal gland trouble was suspected and these were examined, found to be slightly enlarged, and were expressed. Not being quite satisfied that the cause of the trouble had been found, a rectal examination was made. This proved interesting, for it revealed a foreign body, which, on removal, proved to be an open and badly bent safety pin (No. 1 in photo.).



Thinking the mucous membrane of the bowel might be injured, liquid diet was advised for a few days, and medicine containing bis. carb. and salol was given.

No sequelæ developed, and the dog was not seen again until December 11th, when he was brought along at 8-30 p.m., this time with the history that he had been seen to swallow another safety pin the previous evening, and that during the last two or three hours he had been making painful attempts to defæcate, as on the previous occasion.

The animal appeared quite bright. A rectal examination was made and the open pin (No. 2 in photo) removed. It lay in the rectum with the hinged end posteriorly.

The after-treatment was as before and with like results.

On January 7th, the dog was again brought to the College and another safety pin removed. This pin (No. 3 in photo.) was open and bent, as before.

A point of interest physiologically is that the second and third pins took about twenty-four hours to reach the rectum.

Case II.—On November 19th, 1928, an owner brought a three-months-old Alsatian male puppy to the College, asking for worm medicine for same.

The pup appeared quite bright, but a slight discharge from the eyes led one to take the temperature. On inserting the thermometer into the rectum it came into contact with "something" abnormal, and as a result a rectal examination was made and two pieces of bent wire (No. 4 in photo) were removed.

The after treatment and result were the same as in Case I.

An Operation for the Complete Removal of the Scrotum and Testicles in the Dog.

By N. G. Michie, M.R.C.V.S.,
Liverpool.

I perform this operation as a standard treatment for the following chronic conditions affecting the scrotum:—

(1) *Chronic eczema* with consequent thickening, mostly seen in old dogs. The scrotum becomes pendulous and unsightly and the dog is in a state of continual irritation.

(2) *Tumours*: (a) These are mostly growths about the size of a split pea, usually scattered about the scrotum, and in consequence of licking by the dog, severe hæmorrhage is often induced; (b) I have had a few cases of large, quickly-growing tumours, involving in some cases the whole scrotum and pressing the testicles upwards. These are usually carcinomatous, and the sooner they are completely removed the better the prognosis.

Operation. This can be performed upon dogs of all ages without much risk, provided the following technique is carried out. Naturally, in a young healthy dog we expect less risk during the operation, and better healing after, than in an older dog. If the dog is bleeding profusely from a small growth, when brought to the surgery, it is wise to arrest the hæmorrhage by ligature until the operation.

Preparation of Patient. All hair is clipped and shaved from the scrotum and surrounding parts. The tail is bandaged during the operation. Æther is rubbed into the scrotum to remove all grease and tr. iodi. applied. Morphine sulphate, ½ gr.-1 gr., is injected half an hour previous to the operation.

Instruments, etc. Chain écraseur, artery forceps, scalpel, tumour forceps, castrating clam (Gray's pattern for cats is used), suture needle, sterilised catgut and silkworm gut. The instruments and silkworm gut are sterilised, preferably by boiling, as also are the gauze swabs.

Restraint. The patient is placed on its back and the hind legs are held apart by an assistant.

Technique. Cocaine (·5%) is injected round the neck of the scrotum. I now proceed to castrate the dog in the usual manner. A 1in. incision is made through the scrotum near the median raphé. The coats of the testicle are incised to expose the spermatic artery and cord. The testicle is slowly drawn upwards to expose as much of the cord and artery as possible, and the clam (Gray's pattern) is applied as far from the testicle as possible. A ligature of strong catgut is applied close up to the clam, and the cord and artery cut off ¼in. from the ligature. An assistant now grips the base of the scrotum with the tumour forceps, keeping it taut and at right angles to the penis. A transverse, semi-circular incision is made on each side of the scrotum at the neck, and only carried to the depth of ¼in. all round. Note that these incisions meet posteriorly and anteriorly, and are made at such a distance along the neck of the scrotum as will allow of the two edges being sutured together after removal of the scrotum. The latter is performed by fixing the écraseur chain round and into the groove already made by the scalpel. Any slack is taken up after making sure no skin is included. The écraseur is now made to crush, very slowly, through the tissues until the scrotum falls off. Hæmorrhage is usually very slight, needing no attention, but occasionally I have had a spouting artery to ligature. The operation is now completed by suturing the two semi-circular flaps of skin together with interrupted silkworm sutures, leaving about ¼in. between them. Æther is applied and, when evaporated, a few layers of colloid and teased wool protect the wound.

After-treatment. In the majority of cases healing takes place by first intention, and the sutures are removed in eight days. The dog may lick the wound, but healing is only slightly delayed.

NOTE. In the first three cases operated upon I used the scalpel, instead of the écraseur, to remove the scrotum. The resultant bleeding was very profuse, and I had a busy time ligaturing all the vessels. In two of these cases, both old dogs, about ten days after the wound was healed, an abscess appeared over the last two ribs on the left side. On the abscess being lanced recovery was quick. This development was a surprise and I fail to account for it.

BROADCAST TALKS BY VETERINARIANS.

Many of our readers will doubtless be interested in the series of broadcast talks now being given from Scottish stations. Those which are yet to be delivered are as follows:—

Thursday, February 28th, Professor J. Russell Greig:—"Some Aspects of Animal Disease."

Thursday, March 7th, Professor J. Russell Greig,:—"Veterinary Research."

Thursday, March 14th, Professor D. C. Matheson:—"A Poultry Scourge: B.W.D. of Chickens."

Thursday, March 28th, Mr. Wm. Nairn, M.R.C.V.S.:—"Grass Disease of Horses."

Dr. Boyd Orr, Director of the Rowett Research Institute, Aberdeen, believes that the correct admixture of iodine in the mineral ration will prolong by two or three years the useful life of a cow, and will add at least one year to the productive life of the domestic hen.

International Veterinary Congress.

MEETING OF THE ORGANISING COMMITTEE.

A meeting of the Organising Committee of the International Veterinary Congress was held at 10 Red Lion Square, W.C., on Friday, January 11th, 1929, with Sir John M'Fadyean in the chair. There were also present Major J. Abson, Lt.-Col. J. W. Brittlebank, Professor J. B. Buxton, Mr. J. H. Carter, Professor J. F. Craig, Mr. J. C. Coleman, Mr. H. J. Dawes, Professor S. H. Gaiger, Mr. A. Gofton, Mr. Henry Gray, Professor F. T. G. Hobday, Mr. J. Holroyd, Mr. R. Hughes, Mr. W. S. King, Mr. G. H. Livesey, Mr. G. H. Locke, Dr. J. McI. McCall, Mr. J. McKinna, Mr. J. W. McIntosh, Mr. G. P. Male, Lt.-Col. H. R. Reid, Major E. Brayley Reynolds, Dr. J. T. Share-Jones, Dr. A. Leslie Sheather, Lt.-Col. P. J. Simpson, Mr. Trevor F. Spencer, Captain W. K. Townson, Colonel G. K. Walker, Professor A. W. Whitehouse, Mr. J. Willett, Professor G. H. Wooldridge, and Lt.-Col. T. D. Young.

Letters of apology for absence were received from Mr. F. W. Emery, Mr. F. L. Gooch, Mr. J. F. Healy, Mr. J. J. R. Jackson, Major D. S. Rabagliati and Mr. E. Alfred West.

The minutes of the previous meeting were read and signed as correct.

The Honorary Treasurer submitted the following statement, certified by the auditors:—

RECEIPTS AND PAYMENTS ACCOUNT

for the period 1st January, 1925, to 31st December, 1928.

Receipts.	£	s.	d.
Balance from previous Audited Statement ...	3,677	12	3
Dividends	780	0	0
Sale of Reports	1	10	0
Allowance for Unused Cheques	0	8	2
	£4,459	10	5

Payments.	£	s.	d.
Petty Cash	3	0	0
Audit Fee	2	2	0
Printing and Stationery	2	10	0
Income Tax on Dividends	206	17	6
Dr. Bradley's Expenses, Paris Meeting ...	22	12	11
Dr. de Blieck's Expenses, London Meeting ...	8	16	5
Bank Charges	1	2	8
BALANCE IN HAND—			
Cash at Bank 180 12 11			
£4,050 5% War Loan at Cost 4,031 16 0			
	4,212	8	11
	£4,459	10	5

We have audited the above account, and certify it to be correct.

WOODHOUSE & WILKINSON,
Chartered Accountants.

28 Queen Street,
London, E.C.4.,
31st December, 1928.

The report of the Programme Committee was read and adopted.

A letter was received from the National Veterinary Medical Association, nominating the following to serve on the Organising Committee:—Mr. H. J. Dawes, Major G. W. Dunkin, Major D. S. Rabagliati, Mr. W. D. Rees, Captain J. . . Rider, and Captai . W. K. Townson.

It was resolved that the nominations be approved.

It was further resolved that the following be elected additional members of the Organising Committee—Mr. J. Brown (Invergordon), Mr. T. Dalling, Mr. C. W. Elam, Mr. P. J. Howard, Mr. H. Tudor Hughes, Mr. D. Imrie, Mr. J. Ewing Johnstone, Mr. J. Lindsay, Professor J. Macqueen, Captain S. J. Motton, Professor J. J. O'Connor, Mr. J. P. Rice, Mr. H. L. Roberts, General H. S. Sawyer, Mr. R. Simpson. Mr. S. M. Trotter, Captain S. Villar, and Mr. W. Woods.

The General Secretary submitted correspondence relating to rooms available for holding the Congress, and it was resolved that the matter be left in the hands of the Finance and General Purposes Committee.

The question of the election of Patrons and Honorary Officers was considered, and the Secretary was instructed to communicate with the various ambassadors. Other appointments under the head were deferred for the time being.

It was resolved that the General Secretary be instructed to communicate with the Chief Veterinary Officer in the various Dominions and Colonies not represented on the Permanent Committee, with a view to their organising local Committees for the purpose of making the Congress known.

On the proposition of Dr. De Blieck, it was resolved that similar action be taken in the case of all other countries which are not represented on the Permanent Committee.

On the proposition of Colonel Brittlebank, it was resolved—(*a*) That a Publicity Committee be appointed to undertake the work of advertising the Congress.

(*b*) That the Committee consist of Dr. O. Charnock Bradley, Professor Craig, Professor Hobday, Mr. Livesey, Mr. Locke, Mr. McIntosh, Mr. Male, Major-Gen. Sir John Moore, Major E. B. Reynolds, Dr. Share-Jones, Colonel Simpson, Mr. Spencer, Professor Whitehouse and Colonel Young.

A Finance and General Purposes Committee (not exceeding ten members, with a quorum of five), was appointed, as follows:—The President, the Honorary Secretary, the Honorary Treasurer, the Trustees, viz., Sir John Moore, Mr. C. Roberts, and Mr. J. Willett, together with Mr. G. H. Livesey, Mr. G. H. Locke, Colonel G. K. Walker, and Professor Wooldridge.

The Honorary Treasurer and General Secretary were empowered to employ such clerical assistance as may be found necessary.

The President announced that Dr. L. De Blieck, of Utrecht, Secretary of the Permanent Commission, and Dr. A. Eichhorn, of the U.S.A., were in attendance, and gave them a hearty welcome.

Dr. de Blieck expressed his pleasure at being able to attend the meeting and at knowing how thoroughly the Committee was making its preparations for the International Congress, which he was sure would be a great success.

Dr. Eichhorn also expressed his satisfaction at knowing how the Organising Committee were proceeding, and promised that he would do all he could to advertise the Congress in the States. He stated that already it was known that probably a hundred veterinarians from the States would be coming over to the Congress. A vote of thanks to the Chairman concluded the proceedings. (Applause.)

DIVISIONAL REPORTS.

Mid-West and South Wales Division N.V.M.A.

Annual Meeting at Bristol.

There was a good attendance of the members of this Division on the occasion of the Annual General Meeting, which was held at the Royal Hotel, Bristol, on the afternoon of Friday, 28th January, 1929.

The retiring President, Mr. J. C. Coleman, occupied the chair at the outset, and there were also present Messrs. A. S. Adams, Carter Armstrong, J. J. Aveston, J. R. Barker, H. D. Baughey (R.V.C., London), J. R. Baxter, E. C. Bovett, S. Codrington, R. W. Hall, G. E. Henson, J. R. Hewer, T. J. Margarson, J. C. S. Powell, W. D. Rees, Edwin Sayer, W. Scott, Wm. R. Watson, and C. E. Perry, Hon. Secretary.

The *Minutes* of the last annual meeting of the Division, having been published in the *Record*, were taken as read, and were confirmed and signed.

Correspondence.

(1) Letters of regret for inability to attend from Messrs. J. L. Perry, A. Veitch, and others.

(2) From the Secretary of the N.V.M.A., acknowledging the receipt of a resolution from the Council of the Division expressing the view that it was desirable that the N.V.M.A. Council should, in the interests of the profession, consider what action could be taken to induce manufacturers to supply veterinary biological products to qualified veterinary surgeons only. The letter stated that, in the opinion of the writer, most manufacturers of biological products for use in veterinary practice refused to supply laymen direct, but found it difficult to control these products once they were supplied to retail chemists, over whom they had no jurisdiction. There was no reason, however, why the resolution should not be placed before the Council in April, if the Division so desired.

On the proposition of Mr. Scott, seconded by Mr. Aveston, it was agreed to press for the appearance of the resolution on the agenda of the N.V.M.A. Council meeting in April.

The letter also dealt with a further resolution which had been forwarded by the Division's Council demanding revision of the nomenclature of the grades of milk under the Milk (Special Designations) Order, 1923, and suggesting that the N.V.M.A. Council should refer the subject to all their Divisions for consideration. This resolution would, it was stated, appear on the agenda of the April Council meeting of the N.V.M.A.

(3) From the Secretary of the N.V.M.A. covering a draft scheme for the treatment of sick animals of the poor, circulated to all its Divisions by the "National" at the request of the Royal College of Veterinary Surgeons.

This matter was discussed at length, the meeting resolving itself into committee for the purpose, and on the resumption of open meeting the following resolution was unanimously passed: "That this Division of the N.V.M.A. is in entire sympathy with the principle of the scheme put forward, but desires it to be fully discussed at headquarters."

(4) From the Hon. Treasurer of the Victoria Veterinary Benevolent Fund, stating that the Council of the Fund

would be grateful if sanction were given for the forwarding of a collecting box, to be placed on the table at the meetings of the Division.

The HON. SECRETARY reported that at its last meeting the Council agreed to have a box sent down, and one had accordingly been asked for.

The action of the Council was approved.

(5) From the Secretary of the National Horse Association of Great Britain, inviting the Division to support the endeavours being made by the Council of the Association to further the interests of the horse, and suggesting affiliation at an annual fee of £1 1s. 0d.

The HON. SECRETARY stated that this proposal also had met with the approval of their Council.

The decision to affiliate was heartily endorsed by the meeting.

(6) From the Secretary of the N.V.M.A., in the following terms :—

"At an Extraordinary General Meeting of the N.V.M.A., held at the Corporation Wharf, Holliday Street, Birmingham, on November 15th, 1928, the following resolution was submitted :—

"That the following addition be made to Article 59 in the Articles of Association of the Association :

"(d) Twenty-five representatives previously nominated by Members of the Association and elected by them by ballot prior to the Annual General Meeting.

"An amendment was, however, proposed and carried, to the effect that the resolution as set out should be remitted to the Divisions for consideration and discussion and that the views of the Divisions should be submitted to the Council. Should it appear that the Divisions are in favour of the resolution, steps will be taken to submit it again to the Association as a whole at anotner Extraordinary meeting to be called for the purpose and if passed, the resolution will then be confirmed at a subsequent meeting to be called at a later date.

"Unfortunately there was insufficient time to discuss the matter fully at the meeting held on November 15th, and, in case the particular object of the resolution is not quite clear to the members as a whole, it may be of use to explain the circumstances which have led to the resolution being put forward and the object to be attained if it should be passed.

"Representation on the Council of the National Association is at present governed by Article 59 which, in the first case, nominated certain members as members of Council for the year 1925 when the Association was reconstructed ; to-day the Council is comprised of :—

"(a) The President, Past President, Vice-Presidents and Honorary Treasurer ;

"(b) Representatives from each Division of the Association, namely, the Honorary Secretary, and one for every fifty members or a portion thereof ;

and

"(c) Two representatives from each branch, namely, the President and the Honorary Secretary.

"It is not intended to make any alteration in the composition of the Council as set out in Article 59 (a), (b), and (c) above ; it is, however, felt by the Council that the present composition of the Council is not created on a sufficiently broad basis, and that the method of representation, as at present existing, tends possibly to limit that representation to members in or near to London, and who are available and willing to attend Council and Committee meetings, or, put in another way, that the composition of the Council tends to become fixed and is not sufficiently elastic to provide for the inclusion of new members and fresh ideas. After a good deal of careful thought, therefore, it was proposed that twenty-five representatives, who must be previously nominated by members of the Association, should be elected by ballot prior to the annual meeting, as members of the Council for the ensuing year. This proposal, if it finds favour with the Association, would be brought into effect by forwarding to each member of the Association a list of those members who may be nominated, and each member of the Association would be able to vote for the twenty-five vacancies existing. The result of this would be that there would be twenty-five or less representatives elected purely on the personal vote of the members of the Association, which would, in the opinion of the Council, make the election to the Council of a much more democratic nature. It would be quite possible, of course, for any one particular Branch or Division, by all voting for the same candidate for election, to go a long way towards effecting his election to the Council, but this would be a matter purely dependent upon the interest shown by the particular Branch or Division concerned.

"The Council themselves feel that it is in accordance with the interests of the members of the Association and in accordance with modern thought and the increase in membership, that election to the Council should be on as broad a basis and as democratic as possible.

"I should be obliged if you would put this matter to the members of your Division and explain to them the circumstances set out in this letter. The Council would be glad of the views of your Division as early as possible."

The HON. SECRETARY observed that it had for long been felt by the National Council, that purely Divisional representation should be supplemented by something on the lines of election to the Council of the R.C.V.S., whereby twenty-five additional members might be elected on a vote open to every member of the Association. As was stated in the communication from the Secretary of the "National," the resolution was brought forward at an extraordinary general meeting held at Birmingham in November last, but an amendment to remit the proposals to the Divisions for consideration and report to Council was carried.

The PRESIDENT (Mr. J. C. Coleman) expressed the opinion that the sending down of this resolution to Divisions was rather an "eye-opener" to the people who advocated the changes proposed therein. It was, he asserted, the general concensus of opinion of those who mattered in the country that if those changes came about the N.V.M.A. Council would be largely composed of London members. He was strongly in favour of keeping the representation as at present, but he wished to impress upon those who were elected from the Divisions upon the Council of the "National" that, if they allowed themselves to be elected, it was their duty to attend the Council meetings.

Mr. C. E. PERRY said that he desired to make it clear that the twenty-five members it was proposed to elect by the vote of the whole membership of the Association were to be additional to those now sent by the Divisions, *viz.*, the Hon. Secretary (*ex-officio*) and one representative for every fifty members or portion thereof.

Mr. J. R. BARKER, speaking as one who was present at the meeting at Birmingham, stated that the whole of the opposition to the resolution came from Mr. Noel Pillers, in the first instance, and the theme of his opposition was this—that it might be that a number of members situated near London would get themselves nominated and elected, and thus representation would come into the hands of people in or round about London. He (Mr. Barker) voted against him. He thought it was a curious view, and that the view they should take should be a much wider one, but there was no one at Birmingham who refuted what he

thought were the rather spurious arguments of Mr. Noel Pillers. If the meeting desired, he would propose that they accorded their support to that resolution.

The HON. SECRETARY (Mr. W. D. Rees) submitted that what Mr. Barker had said was very true. The total number of representatives from Divisions on the Council of the "National" was over 100, and yet at their Council meetings the attendance had sometimes fallen to below twenty, because Divisional representatives would not travel up to London. Therefore, they must have a certain number of representatives from the London neighbourhood. Under the proposed scheme, every member of the Association would have votes, and it must be remembered that of course the majority of the members lived outside London. His only objection to the scheme (which he wholeheartedly supported) was that, if they took the R.C.V.S. Council election as any guide, it would be a futile expense. They all knew what a lamentably small porportion of members took the trouble to vote in that election. Nevertheless, the idea was a good one. Apart from Divisional representation, it would give national representation, because every member of the Association would have an opportunity of voting. He would second Mr. Barker's resolution.

Mr. COLEMAN proposed, as an amendment: "That the number of representatives on the Council of the N.V.M.A. be augmented by twenty-six, *viz.*, by the President of each Division, in addition to the present representation of the Hon. Secretary (*ex-officio*) and one for every fifty members or part thereof."

Mr. W. SCOTT seconded the amendment

Mr. A. S. ADAMS supported the resolution, stating that any Division which was sufficiently keen could secure the return of one of its own men.

Mr. J. R. HEWER also supported. In his view the amendment was at fault in that it would be asking too much of the President of a Division far distant from London to consider it part of his duty, when taking office, to attend Council meetings of the N.V.M.A. Under the proposed scheme, however, it would still be open to them to nominate their President should be he willing to serve on the Council.

Mr. R. W. HALL expressed agreement with the views of those who had supported the resolution, and pointed out that even as matters were at present Divisional Presidents could be returned to represent the Division on the one in fifty basis of representation.

Mr. COLEMAN replied that he was trying to get one more representative for their Division. He admitted that it was possible to get their President on the Council if they voted for him, but, especially in the south, there was a great deal of slackness in the matter of voting, if the R.C.V.S. Council election was any guide. The Association wanted to increase the number of members of Council because of the small attendances sometimes secured at the Council meetings The fault lay with the Divisions themselves, for selecting men to represent them who did not attend. As far as the "Mid-West" was concerned, if the resolution proposed by Mr. Barker was carried they would be at the bottom of the poll, for only those Divisions which were keen would get their members in.

Mr. BARKER observed that he, too, thought that they should consider in what way the Division would be affected, and not only their Division, but every local association. If Mr. Coleman's amendment were accepted it would place a great bar in the way of a man of small means accepting the presidency. It might be impossible for such a man to fulfil both the duties of President and of representative to the Council in London, though he might be willing to accept the Chair.

The President now put the amendment to the meeting, when it was lost, the resolution being subsequently carried by a large majority.

Hon. Treasurer's Reports. Mr. A. S. ADAMS presented his reports as Hon. Treasurer of both the Division and of the Division's Benevolent Fund. The balance sheets of these accounts showed the finances, under both headings, to be in a very satisfactory state, and the reports were received and adopted. The PRESIDENT, on behalf of the Division, thanked Mr. Adams for his sterling work as holder of the office of Hon. Treasurer, and particularly in connection with their local Benevolent Fund. The members would notice that, owing to the generosity of Mr. Adams, the expenditure in regard to that Fund was represented as *nil.* (Applause.)

Hon. Secretary's Report. Mr. W. D. REES submitted the following report, in his capacity as Hon. Secretary:—

During the Session 1928 we have held one Annual General Meeting and Dinner, three General Meetings, and four Council Meetings.

The average attendance at the General Meetings was twenty-two, and at the Council Meetings nine.

The present register membership of this Division is eighty-four, not including the eight honorary members.

Five new members were admitted, and Lt.-Col. Brittlebank, C.M.G., was enrolled as an honorary member.

I regret to have to report the death of two members during the year.

We were honoured during the year by the presence of many visitors, amongst the number being Lt.-Col. Brittlebank (then President of the R.C.V.S.) and J. W. McIntosh, Esq. (then President of the N.V.M.A.).

We are indebted to Dr. A. Leslie Sheather, M.R.C.V.S., for an address on "The Diagnosis of Parasitic Diseases of the Alimentary Tract by the Examination of the Fæces"; Lt.-Col. J. W. Brittlebank, C.M.G., for an address on "The Clinical Diagnosis of Bovine Tuberculosis"; J. G. Wright, Esq., F.R.C.V.S., for a paper on "Intestinal Diseases of the Dog"; The Chief Veterinary Officer and his Staff of the Ministry of Agriculture and Fisheries Laboratories, Weybridge, for their invitation to the members to visit the Laboratories, their addresses on the various sections of the work done there, and their kind hospitality; and to those members who stated clinical cases and exhibited specimens at our meetings.

The motion (proposed by Mr. BOVETT) for the reception and adoption of the report having been carried unanimously,

The PRESIDENT said that, before proceeding to the next business (the election of officers), he would like to thank the members most sincerely for the very great honour he felt them to have accorded him in having placed him in the Chair during the past year, and for the very loyal way in which they had supported him. He regretted that his work in a certain direction had not been done as he had hoped it might have been during his year of office, but he would like to suggest that it would serve a good purpose if Presidents were afforded the opportunity, at their first meeting in the Chair, of indicating the line upon which

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they desired the deliberations of the Society to go during the following year. He thought that by that means the personality of each President would be exemplified, and good work would be done. Further, if the President introduced such work of a special character, he would like to see him elected for a second year to carry it on. He was alluding to the importance of veterinary politics, by which he meant methods of bringing the veterinary profession more before the public and raising their social status.

He wished again to thank the members for their support, and also those gentlemen who had brought forward clinical specimens and read papers at their meetings. Especially did he desire to thank their worthy Secretary, who had done all the work. In that connection he would like to suggest that it would alleviate the lot of the Secretary if in future all material of importance could be submitted to the President before the meeting, so that he might be cognisant of any important business that was coming forward.

Election of Officers.

President. Mr. Coleman, continuing, said that he would now proceed to perform a very pleasant duty, namely, to put before them the unanimous recommendation of the Council with regard to his successor. From the Chair he would like to propose that Mr. R. W. Hall be their President for the ensuing year. (Applause.)

There was no need to put the proposition to the meeting—it had been carried with acclamation—and he would ask Mr. Hall to take the seat now vacated by him.

The newly-elected President accepted the Chair, amid loud applause, and in returning thanks for his election, said that he accepted the Presidency with a deep sense of the honour the position carried, but also with a certain amount of misgiving as to whether he should be able to maintain the high standard that had been set by his predecessors. The Mid-West and South Wales Veterinary Medical Association had been a success since its inception, and all of them wished it to continue so, but the success of that and all other associations depended not only upon the appointment of good and faithful officials but also upon the support given and regular attendance of the members at the meetings.

Great achievements had been performed in veterinary science during the past few years, and all honour was due to those who had achieved them There yet remained, however, plenty of fields to explore and problems to solve, and they, as clinicians, could and should help. It was at meetings of that kind that, by discussion and interchange of opinions on various subjects, they assisted in the elucidation of some of the problems and difficulties with which they met. There were other problems, such as the encroachment upon their legitimate sources of income by men and bodies outside the profession, which they could discuss and, may be, set up means of defence to protect their interests. Individually they could do little: collectively they might attain much.

It was for that reason that he urged them to come to the meetings and voice their opinions. He thanked them again for the honour which they had conferred upon him.

Vice-Presidents. The retiring President, Messrs. C. E. Henson, R. Moore and W. Watson.

Hon. Secretary. Mr. Chas. E. Perry. In announcing the recommendation of the Council that Mr. Perry be elected to fill the office of Hon. Secretary, rendered vacant by the retirement of Mr. Rees, the President expressed the deep regret with which all would learn of the decision of Mr. Rees to resign the position. Two years previously Mr. Rees had passed from the Presidency to the Secretaryship, and now felt that he was entitled to a rest. All must admit, concluded the President, amid applause, that that rest had been well earned.

Mr. Adams said that he desired to associate himself with the President's expression of regret concerning the resignation of Mr. Rees from the position of Hon. Secretary. Mr. Rees had given a great deal of time to the Division and put in a lot of hard and excellent work on its behalf, as those who served with him on the Council of the Division particularly could testify. He could assure them that Mr. Rees' resignation was only accepted after every effort had been made to induce him to continue.

Mr. Coleman also voiced his regret, remarking that any President who had such a secretary as Mr. Rees at his elbow found his task not only a very interesting but a very pleasant one.

Mr. W. Scott, speaking in the same connection, said that he had attended the last Council meeting, but unfortunately he had had to leave before its termination, and the bombshell that had now been dropped in regard to the resignation of their most energetic and excellent Secretary had nonplussed him. He knew that Mr. Rees' work had been very hard, for he was aware how much was involved in such a post, having himself occupied the presidency for two years when Mr. Aveston was Hon. Secretary. He had hoped that Mr. Rees would have been good for the next ten years. At the same time, the Division was fortunate in securing so able a successor, and he was sure that the support that had been given to the late Secretary would be conferred in full measure upon the newly-elected one.

Hon. Treasurer. Mr. A. S. Adams (re-elected).

Council. Messrs. Atkinson, Aveston, Barker, Coleman, Hall Masheter, Henson, Hewer, Moore, Powell, Rees, Sayer, Scott, Watson, and J. L. Perry.

Representatives on the Council of the N. V.M. A. The President (Mr. Hall), Mr. Coleman, and the Hon. Secretary (*ex-officio*).

Morbid Specimens and Cases of Interest.

Mr. C. Armstrong exhibited a tuberculous eye from an ox. There was no history of the case, which was one of generalised tuberculosis. Mr. Carter further showed the cystic left lobe of the liver of a twenty-four-year-old pony. He had attended the pony for the past eighteen years, and the animal had never previously ailed in any way before showing symptoms of that condition, when subacute colic was evidenced. The pony was kept alive for a week with various treatments for bowel trouble, but he was then destroyed. The members would observe that the liver tissue was practically *nil*; it had been crushed out of all semblance to liver by the cystic formation.

Mr. J. C. Coleman said that about six weeks ago he was called to a case of a second-calf cow which passed blood after urinating; the blood was arterial, and bright red.

He gave injections of adrenalin and ergot, and thought she had recovered, but about a fortnight afterwards he was watching her for a few moments and saw her micturate, and immediately afterwards bright red blood was again passed.

In a further ten days the cow was very emaciated and in a quarter of an hour she micturated twenty times, but no blood was passed until the last time. He had examined her with a speculum in the vaginal passage about half a dozen times, but he could see no indication as to where the blood came from. He therefore diagnosed the case as cystic or renal disease. Eventually the cow was destroyed, and on *post-mortem* he found the bladder very constricted, with thickened walls. On opening it, he found inside a quantity of dark urine which looked like disintegrated blood. He also noticed large ulcers in the bladder, and he came to the conclusion that the bleeding had taken place from them. In the pelvis of the kidney there was a considerable quantity of similarly disintegrated blood in the urine. In the alveoli there was some granular material. Most of the tissue of the kidney was destroyed. He was sending it up to Principal Hobday for his opinion, but he thought he would put the case before the members to see if they could enlighten him as to what the condition really was. The cow was one of a Grade A (T.T.) herd.

The PRESIDENT remarked that the specimen of kidney (exhibited) looked like a case of chronic interstitial nephritis.

Mr. SCOTT remarked that the bladder (also exhibited) revealed chronic cystitis. The condition probably started with sabulous deposit in the bladder.

The PRESIDENT (Mr. Hall) said that he had a rather interesting case to report. This was a cow that came under his inspection at the abattoir, having been brought in for slaughter. She was in medium condition. He was amazed, when the carcase was opened, to see the condition of the liver, which weighed 66 lbs. He sent a portion of it to Dr. Hare, and the following was his report:—

"Microscopic examination of sections made from the liver of a cow sent to me on the 27th November revealed regenerative changes taking place in a cirrhotic liver, which are known as multiple nodular hyperplasia. These changes indicate a healing process on the part of the liver parenchyma, portions of which had previously been destroyed by some toxic or infective factor—more probably the former. However, the cause of this previous destruction is not apparent in the sections."

The carcase was also weighed, and that weighed 365 lbs., so that the liver weighed just one-fifth of the whole of the carcase weight, and they could imagine its size. The animal was eight years old.

Mr. SCOTT observed that it was a notorious fact that a number of gross lesions did occur in the livers of animals that, to all outward appearances, were in the pink of condition.

The PRESIDENT (Mr. Hall) stated that he wished to record what he would describe as a miraculous escape. A cow grazing on the top of a cliff fell fifty or sixty feet to the beach. It was found fifteen yards away from the place where it fell over, and to everyone's astonishment it was able to walk. The animal was walked over the pebbles one and a half miles before it fell at a spot fortunately sufficiently high up the beach to be out of the reach of the tide. The only reason he was called in was because the cow was unable to rise and the only lesion he could find was bruising of the gluteal muscles and of the muscles over the sacrum and ilium. Two days later the animal got up, ate and having apparently entirely recovered, walked back to the byre.

Next meeting. It was agreed to hold the next quarterly meeting of the Division at Bath.

This concluded the business, and the members subsequently enjoyed "high tea."

C. E. PERRY,
Hon. Secretary.

Derbyshire Division, N.V.M.A.

MEETING AT DERBY.

A meeting of the above Division was held at the Royal Hotel, Derby, on Tuesday, January 8th, 1929. The President, Major T. V. Bagshaw, occupied the Chair, and there were also present Messrs. Percy Abson, H. S. Cockburn, J. C. Deville, H. C. Gregory, W. J. Ironside, John McArthur, E. Wilkinson and O. V. Gunning, (*Hon. Secretary.*

Letters of apology for absence were read from Messrs. Marrison and Evershed.

The minutes of the last meeting were read and confirmed.

The following were elected members of the Division:—Messrs. H. C. Gregory (Derby), Thos. Ludlow (Mansfield) and John McArthur (Tutbury).

A letter was read from the National Horse Association of Great Britain, regarding affiliation and, on the proposition of Mr. DEVILLE, seconded by Mr. IRONSIDE, it was resolved that the Derbyshire Division should become an affiliated Society.

A letter was read from the Royal Sanitary Institute, regarding the appointment of a delegate from the Division at their coming Congress at Sheffield. It was resolved that the letter lie on the table until the next meeting.

It was resolved that a Victoria Veterinary Benevolent collecting box be placed on the table at each meeting.

PRESIDENT'S ADDRESS.

The PRESIDENT, in a few well chosen remarks, thanked the members for the honour they had conferred upon him by electing him President for the year 1929. He further said: "I am fully alive to my unfitness to occupy so exalted a position, but with your help and the ever-ready assistance of our indefatigable Secretary, I will try to carry out the duties of President in a manner suited to that office. The Division at the present time has a larger membership than at any time since its commencement, but that is not enough—we want your attendance and active participation at the meetings. Though our numbers are up, the attendances at several of the meetings last year were poor—a meagre return for the work of our Secretary and for those who go to the trouble of preparing and reading papers at the meetings. You will see from the resumé of the year's work which was sent to all members that we had numerous papers and discussions of a most

interesting nature and I trust we shall have many more. It seems to me that the papers read can be roughly divided into two classes: one, the specialised scientific paper, with its wealth of carefully thought out facts, figures and deductions, and the other, the shorter, more practical, paper of the general practitioner, on subjects met in our daily round. We heartily welcome both classes of papers. The general practitioner cannot do without the more scientific specialist and I venture to hope that the specialist cannot do without us. Let us have many papers from both.

"As regards finance, our Division is in a satisfactory position.

"There is one suggestion I should like to make, which may appear on a future agenda. A large proportion of our time is taken up with business matters at the expense of the paper or discussion to follow. I would like to see the Council meet half-an-hour before the meeting to deal with extraneous matters, a resumé to be given at the full meeting. I will not say much more, as there are several items on the agenda much more interesting than my address. Particularly do I call your attention to the scheme for free treatment for animals of the poor. This I consider is a scheme which merits our most careful and considered discussion. I feel that some scheme similar to that of the medical practitioner will be needed sooner or later and I hope that if such a scheme does come it will have been considered and approved by the general practitioner as well as by the governing body."

A discussion then took place on the suggested scheme for providing free treatment for sick animals of the poor, and at its conclusion the following resolution was unanimously passed:—"That this Association gives its hearty support to the R.S.P.C.A. scheme for providing free treatment for sick animals of the poor."

It was felt, however, that the time was premature for offering any suggestions as to how such a scheme could best be worked locally, though at least two such clinics were at present in operation in the immediate district, local veterinary surgeons attending.

Mr. H. S. COCKBURN, M.R.C.V.S., then read a paper: "Some Observations on and Experiences of the Use of the Stomach Tube." [This paper is published, together with the discussion which followed, at the commencement of this issue of the *Record*.—Ed.]

At the conclusion of the discussion a hearty vote of thanks was accorded Mr. Cockburn for presenting such an interesting paper. The Hon. SECRETARY said he personally appreciated Mr. Cockburn's paper, for when he (Mr. Cockburn) joined the Division he had told him (the Speaker) "There is just one condition—that is, that I shall not be asked to read a paper." He knew it was only a true sporting spirit that had prompted Mr. Cockburn to change his mind.

Mr. COCKBURN suitably replied.

Following the meeting, the President and Mrs. Bagshaw entertained the members and their wives to tea.

A hearty vote of thanks to the host and hostess terminated a most successful afternoon.

O. V. GUNNING, *Hon. Secretary.*

From The Veterinarian, February, 1828.

To Our Correspondents.

In our examination into the state of Veterinary Periodical Literature, in the First Number, in hinting at the presumable and even palpable advantages possessed by such works in general over the single and occasional productions of individuals, we offered as one reason (and perhaps it is the one upon which we may most safely repose)—"because the latter is solely dependent upon the labour and ability of one or two persons, whereas the periodical is mostly the product of the contributions of many." Now, pray, who are the many? The many we had in our eye at the time we penned the word, are those individuals who have already—so early—favoured this Journal, and those who may hereafter do so, with communications; to them it is that are addressed the observations that follow, not doubting but, upon a serious, deliberate, impartial examination of the subject in their own minds in all its bearings and relations, they will approve of the course about to be taken towards establishing *The Veterinarian* upon a basis, no less firm than respectable in itself, no less creditable than advantageous to the Journal, to the Science, and to the Profession.

The value of Correspondents to such miscellaneous publications as the present, has been felt to be such at all times that Editors in general may be said to make it an important part of their study, to discover by what means and in what ways they are with most success invited to flock around the standards to which, from profession, interest, or caprice, they do, or choose to, respectively belong. We have nothing to do in this account with those anomalous beings who, perverting their own understandings and running counter to common sense, profess to know more by instinct than others do or can by learning and experience—who, in their own superstitious folly, were from their cradle—nay, from their very exit from their mother, endowed with more knowledge than can be acquired by any application of mind or body, any capacity, means, or opportunities. Perhaps there is no art or science that experiences more incursions of this description than the Veterinary; and we may add, but one, and that the kindred science of medicine, which can feel such fatal consequences therefrom: the Veterinarian is pushed out of the stable by some illiterate groom or coachman, or, with yet more repugnance to reason and common sense, is supplanted or thwarted by a man of education, so short-sighted as to fancy himself one of the instinctively endowed, or, what is as absurd, to pique himself upon an experience he knows not how to reason on, and consequently not to profit by; and, as one glaring absurdity seldom fails to beget another, we have sportsmen—pure genuine foxhunters—writing on *chronic cough and the diseases of hunters*, as if the very circumstance of the hunter being the subject of these maladies, brought the disease, as well as the animal (and the saddle and bridle too, we suppose) within their precious omniscient observation.

But, to put an end to this digression, wherein we have been led away somewhat imperceptibly, and to resume our original thread, we were going to break to our Correspondents what strikes ourselves to be a plan replete not only with the interests of the science, but with their own individual interests; inasmuch as it is one that will show the Public who of the Profession are deserving of their confidence, while it affords tolerably satisfactory evidence to the Members of the Profession themselves, of the knowledge, ability, and zeal, respectively diffused amongst them. And as there are no stronger incentives to exertion than emulation and responsibility, so, we conceive, in the same ratio in which our plan of future proceeding involves these considerations, in that same degree must it turn out to be advantageous to the science. Thus much premised, we proceed to make known our intentions.

We do not like, at this early period, to go so far as positively to declare we will refuse to insert any Communication of any description that may not have the author's name affixed to it; but we have come to a resolution to be more than commonly fastidious in regard to *anonymous papers*, and more especially such as may in anywise reflect upon the character or conduct of individuals. Our purpose is science, not satire; our views of reform such as will conciliate, not such as may tend to widen those breaches which are no less injurious to our common interests than detrimental to the art we in common profess and practise. We are well aware, in forming such a resolution, that there are some potent and influential objections to be urged against us; but, let it be remembered, on the other hand, that the present system of anonymous writing is also one far from being unexceptionable: indeed, we have our doubts, abused as the latter has been of late, whether it has done most good or most harm to the cause it professed to espouse and the interests it stood pledged to protect. There are comparatively in society but few individuals who can be said to be even tolerably fitted for the duties of criticism and literary dominion; and few indeed even out of those who have sufficient discernment, rectitude, and independence, to mete out praise and censure with equal impartiality and justice. Criticism may be said to be to the mind what the actual cautery is to the body: judiciously applied, a most potent and efficient agent; injudiciously handled, a cruel and destructive instrument; and, to pursue the metaphor, both are likely to be employed with most judgment when the operator finds himself, nominally at least, if not morally, responsible for his undertakings. Were not it the custom in this country for critiques to be anonymous, the press would not be infested with that race of unprincipled scribblers with which it teems at the present day—in medicine as well as in politics: such as were really capable would then appear alone in the character of critics; pretenders would hide their "diminished heads"; the demon of sarcasm would sink into that gulph of infamy into which he would, to serve his own base purposes, hurl all those who might stand in his way.

We might be induced to pursue this subject further did we not imagine that enough has been already said to draw the attention of our subscribers to its bearing, and to convince them, whether the step turn out to be politic or impolitic as regards ourselves, it is one we are prompted to take in consideration of the respectability of our Journal, and the unanimity of the Profession.

He who labours in the cause of science, whatever his labour may amount to, acts a meritorious part and deserves the acknowledgments of his professional brethren; and ought, in justice to himself and satisfaction to them, to annex his name to his performance: and he who writes with a view to correct the conduct of others or reform abuses, and has not the courage or candour to subscribe his signature, is the most likely of all other persons at another time to find fault without cause, asperse private character, make a stab at reputation, and thus do more harm by one such lampoon than the amount of good from all his writings of an opposite tendency put together. In the French periodicals, we find no article, not even the review of a work, appearing without the name of its author subjoined: were such the practice in this country, private character would be spared many pangs; the gentlemen of the bar, many briefs.

In furtherance of our present designs, we propose giving upon the cover of our Journal a printed list of the names of our Correspondents; they must be regarded as fellow-labourers—*collaborateurs*, as the French better express it—in this nursery of a science of growing utility and importance and therefore are entitled to all the credit of contribution: it is right that others should know on what authority statements are made; it is due to those making them that no one else should run away with the credit of them.

In forwarding the above extract, Professor J. B. Buxton writes:—"This appears to me to be of very great interest, since it confirms to such a remarkable extent the views which are held by those responsible for *our* Journal."

NOTES AND NEWS.

Diary of Events.

Feb. 18th—Meeting of the Editorial Committee, N.V.M.A., 10 Gray's Inn Square, W.C.
" 23rd—Annual Meeting of the North of England Division N.V.M.A., at Newcastle-on-Tyne.
" 27th—Meeting of the Ayr Congress Provisional Committee, at Glasgow.
" 28th—Annual General Meeting of the Eastern Counties' Division, N.V.M.A., at Ipswich.

R.C.V.S. Council Election, 1929.

The nominations given below have been made to date for the forthcoming election to Council, R.C.V.S. Names marked with an asterisk are those of serving members who are nominated for re-election. There are eight vacancies.

Name.	*Address.*	*Proposers.*
*Carter, Joseph Henry	Henley-on-Thames	J. W. Brittlebank, J. Clarkson.
Dunkin, George William	London, N.W.7.	O. Charnock Bradley J. Moore.
*Hobday, Frederick T. G.	London, N.W.1.	J. Macqueen, J. W. Brittlebank.
*King, William Samuel	London, E.14	F. T. G. Hobday, H. Sumner.
Kirk, W. Hamilton	London, N.W.11.	F. T. G. Hobday. J. Moore.
*McKinna, John.	Huddersfield,	O. Charnock Bradley J. Clarkson.
Rabagliati, Duncan Silvestro.	Wakefield, Yorks.,	J. Abson, J. Clarkson.
*Simpson, Percy	Maidenhead,	O. Charnock Bradley J. M'Fadyean.
*Spencer, Trevor F.,	Kettering,	J. Abson, J. W. Brittlebank.
Walker, G. K.	Abingdon,	G. P. Male, J. Willett.
*Young, T. Dunlop,	London, E.C.1,	J. Moore, J. M'Fadyean.

B.Sc. IN VETERINARY SCIENCE.

UNIVERSITY OF LONDON EXAMINATIONS.

Preliminary Examination in Veterinary Science.—March, C. F.

Intermediate Examination in Veterinary Science (Part I).—Hobday, J. H. N.; Stobo, T. W.; Watts, P. S.

Intermediate Examination in Veterinary Science (Part II).—Barron, N. S.; James, A. J.; Longley, E. O.; Polding, J. B.

Final Examination in Veterinary Science.—Evans, J. T. R.; Purchase, H. S.

CORRESPONDENCE.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

Canine Distemper.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—Under the above heading, Mr. Gorton writes that he disagrees with my statement that probably 90 per cent. of dog carcases would be found to harbour worms. When I said "probably 90 per cent," I was, of course, not impressing that figure as a true and ascertained estimate. I was obviously implying that a great majority of dogs are affected with worms and, in spite of contrary opinions, I still believe it.

For a number of years I have had exceptional opportunity of examining a large number of carcases beside those which come to me in the ordinary routine of practice; and this because I undertake *post-mortem* examinations for a canine paper. From my experience thus gained I

can safely say that it seems to be somewhat exceptional to find an alimentary tract quite devoid of worms of some sort. I was under the impression, too, that those practitioners who *really do* specialise in canine practice were of the same opinion.

Mr. Gorton remarks that "eminent veterinary surgeons seem to be agreed that these parasites do not harm their hosts, but the lesser lights of the profession and the unqualified still pin their faith to them as money bringers." Mr. Gorton does not indicate what is his own opinion on the matter, so that we cannot tell whether he is in eminence or a lesser light; but it seems a little unfair to bracket the latter with the quacks. In point of truth, however, Mr. Gorton is in error in making that assertion, because I have often heard our most eminent members condemning the worm as a serious menace to health. Personally, I have never held this view, but believe that they cause little more than anæmia, loss of condition, rectal irritation, etc., unless they are present in huge quantity—when they may set up various nervous phenomena. I do not believe they are usually productive of enteritis, intussusception, and other serious maladies—a view which I expressed at the recent Royal Counties Division meeting at Reading.

In stating that probably 90 per cent. of dogs have worms, I am obviously implying that their presence usually does no harm, otherwise these 90 per cent. would be sick dogs; whereas I find that worms exist in instances in which they were quite unsuspected.—Yours faithfully, HAMILTON KIRK.

"Croyland,"
Finchley Road,
Golders Green, N.W.11,
9th February, 1929.

Malignant Catarrh in Bovines.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—One does not believe that everything concerning disease is better known on the Continent than at home, but research is better supported there and perhaps more intensive and extensive, and it is interesting to take a bird's-eye view of the findings there. Research into cattle diseases is badly needed, and Mr. Lyle Stewart's paper on the above subject shows that alert young minds are alive to the fact.

E. Weber, Doctor of Veterinary Medicine of the University of Leipzig in his quite recent book *Die Krankheiten des Rindes* (The Diseases of the Ox) states that malignant catarrhal fever of cattle is a non-contagious infectious disease, in which the eyes are always and chiefly affected, and also the near-by mucous membranes of the head, and may be localised in the intestine, the brain, the lungs and finally the skin. Particular forms may appear regularly, but develop mostly into each other. The head form, however, is the most frequent.

The cause is obscure. Reisinger considers it to be a paracolibacillus. In practice one is often tempted to blame the bacillus of necrosis. (In *The Veterinary Journal* for March, 1928, p. 151, Ernest and Hahn found, in five cases of malignant catarrhal fever in cattle, vessel infiltrations in the ammonshorn and nucleus candatus typical of Borna disease.) Nocard found an ovoid bacterium in the croupous membrane as in hæmorrhagic septicæmia. Leclainche, a coli-bacterium.

Transmission from animal to animal by contact was not the rule, and the doctor many times put very sick cattle along with healthy ones without the latter being attacked. The mode of infection is obscure. He gives the period of incubation as from twelve hours to four weeks, and the mortality from 12 to 100 per cent. His treatment is symptomatic. As regards prophylaxis, he stresses the cleaning out of the manure pit and channels, and making them cement proof against inflow from outside.

Haubner (15th edition) revised by O. Roder, Doctor of Veterinary Medicine of the Dresden School, gives the following *post-mortem* symptoms: bluish inflammation and swelling of the mucous membrane of the nose, head cavities, and pharynx, with hæmorrhages, scabbing, dirty ulcers or croupous deposits; mucous membrane of the mouth bluish, with easily loosened epithelium (erosions) in the trachea and bronchi-hæmorrhage of the mucosæ; croupous islets; interstitial emphysema in the lungs; stomachs and intestine inflamed; swelling of Peyer's follicles and mesenteric glands; hæmorrhages in the mesentery and omentum and under the pleura; excess of blood in the brain; inflammation of kidneys, bladder and vagina.

Washing out the nostrils with 2 per cent. creolin and the intra-tracheal injection of Lugol's solution is recommended, together with good airy quarters, suitable warmth and easily digested diet. Urine-soaked earth is mentioned as something to be guarded against.

Weber gives 71 references to the literature of the subject, and states that it was first described by Bugnion in 1877.

Haubner looks on the disease as a stall or shed miasma, due to emanations from the floor and walls, favouring development of moulds; also to organic stuff (dung) in the drinking water.—Yours truly, G. MAYALL.

Technique of Rothera's Test.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—In the current issue of the *Record*, Rothera's test, as demonstrated at the annual meeting of the North Wales Division, is described, and I notice that I did not state the quantity of milk I was testing. As this is probably the first time this test has been described in the veterinary press, I shall be obliged if you will reprint the complete test.

To half-an-ounce of the suspected milk (preferably in an ounce phial), add 20 minims of Rothera's test solution—consisting of equal parts of glacial acetic acid and a 10 per cent. solution of sodium nitroprusside. Shake well and allow to stand a minute. Then pour a little (half a drachm of more) liquor ammon. fort., with great care, down the side of the phial so that it will lie on the top of the milk, and allow the mixture to stand. In from three to fifteen minutes, if acetone is present, a pale fuchsia ring will appear at the junction of the liq. ammon. fort., with milk. Daylight is necessary for a correct reading of the colour reaction, when the amount of acetone in the milk is small in quantity.—Yours faithfully, OSCAR STINSON.

Appleby, Westmorland,
11th February, 1929.

"The Employment of X-rays in the Diagnosis of a Suspected Case of Fracture of the Os Suffraginis."

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—In justice to Major Bamford and myself, it seems desirable to state that Figure 2, which accompanied the article published under the above heading in *The Veterinary Record* of 2nd February, received substantial alteration, after leaving our hands. Your proof of this illustration, which we passed for publication, and which we retain, corroborates the statement in the text that the skiagraph "reproduced as Figure 2, shows the line of fracture to be barely perceptible although it was plainly apparent in the corresponding films taken on 31st January." The effect of the alteration, which appears to have consisted in amplifying the shadow by means of a needle, has been to make the line of fracture too apparent.

We must express our disappointment at the mutilation of the illustration and the obvious contradiction of the text of the article, which resulted from it.—I am, yours faithfully, A. A. PRYER.

Royal Army Veterinary School,
Aldershot,
7th February, 1929.

[It must be remembered that it is a common occurrence in X-ray work that the reprinting of skiagraphs does not show to advantage what was apparent in the negative. The line A to B was inserted to indicate the line of the fracture which can faintly be seen anterior to it.—Ed.].

The Editor acknowledges the receipt of the following:

Report of a meeting of the Eastern Counties Division, N.V.M.A., from Colonel W. A. Wood, Hon. Secretary.

Communications from Messrs. F. T. Harvey (St. Columb), W. Lyle Stewart (Newcastle-on-Tyne) and J. D. Peele (Royal Veterinary College).